Nebraska Department of Environmental Quality
Regional Haze State Implementation Plan
Five-Year Progress Report

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Glossary

AERR	Air Emissions Reporting Requirements
AQI	Air Quality Index
BART	Best Available Retrofit Technology
CAIR	Clean Air Interstate Rule
CAMD	Clean Air Markets Division
CASTNET	Clean Air Status and Trends Network
CEMS	Continuous Emissions Monitoring System
CENRAP	Central Regional Air Planning Association
COHA	Causes of Haze Assessment
CSAPR	Cross-State Air Pollution Rule
DRR	Data Requirements Rule
DV	Deciview
EGU	Electricity Generating Unit
EPA	Environmental Protection Agency
FIP	Federal Implementation Plan
GGS	Gerald Gentleman Station
IMPROVE	Interagency Monitoring of Protected Visual Environments
MACT	Maximum Achievable Control Technology
MATS	Mercury and Air Toxics Standards
MOVES	Motor Vehicle Emissions Simulator
NAAQS	National Ambient Air Quality Standards
NCS	Nebraska City Station
NDEQ	Nebraska Department of Air Quality
NEI	National Emissions Inventory
NESHAP	National Emission Standards for Hazardous Air Pollutants
NOx	Nitrogen Oxides
NPDES	National Pollutant Discharge Elimination System
NPPD	Nebraska Public Power District
OPPD	Omaha Public Power District
PM	Particulate Matter
PSD	Prevention of Significant Deterioration
PTE	Potential To Emit
RHR	Regional Haze Rule
RPG	Reasonable Progress Goal
RPO	Regional Planning Organization
SCR	Selective Catalytic Reduction
SIP	State Implementation Plan
SO2	Sulfur Dioxide
TPY	Tons Per Year
TSD	Technical Support Document
VOC	Volatile Organic Compound
WRAP	Western Regional Air Partnership

Executive Summary

Regional Haze

Regional haze is defined as visibility impairment caused by the emission of air pollutants from numerous sources located over a wide geographic area. The Clean Air Act of 1990 (Title I, Sections 169A and 169B) declared a national goal to prevent any future - and to remedy any existing - impairment of visibility in 156 mandatory federal Class I areas, the impairment of which is the result of man-made air pollution.

In 1999, the U.S. Environmental Protection Agency (EPA) issued regulations for the protection of visibility in Class I National Parks and Wilderness Areas. Revisions to the Regional Haze Rule (RHR) were promulgated on July 6, 2005 and October 13, 2006. These regulations require states to establish goals for improving visibility by developing long-term strategies for reducing emissions of air pollutants that cause visibility impairment. The most recent revisions to the rule were issued December 14, 2016, and address preparation and submission of implementation plans and progress reports.

The overall goal of the regional haze regulations is to achieve natural background visibility conditions in all Class I areas by the year 2064. The first interim goal period will end in 2018.

EPA and other agencies have been monitoring visibility in national parks and wilderness areas since 1988. The RHR requires the states - in coordination with EPA, the National Park Service, U.S. Fish and Wildlife Service, U.S. Forest Service, and other interested parties - to develop and implement air quality protection plans to reduce the pollution that causes visibility impairment.

Five multi-state regional planning organizations (RPOs) work together to develop the technical basis for these plans. Nebraska is part of the Central Regional Air Planning Association (CENRAP). CENRAP is an organization of states, tribes, federal agencies and other interested parties that identifies regional haze and visibility issues and develops strategies to address them. As one of the five RPOs across the U.S., it includes the states and tribal areas of Nebraska, Kansas, Oklahoma, Texas, Minnesota, Iowa, Missouri, Arkansas, and Louisiana.

Nebraska and the Regional Haze Rule

On July 13, 2011 the Nebraska Department of Environmental Quality (NDEQ) submitted to EPA its state implementation plan (SIP) for the initial goal period of the RHR. In developing this SIP, NDEQ worked with CENRAP to coordinate regional efforts to improve visibility at Class I areas within CENRAP and other RPOs. The Causes of Haze Assessment (COHA) analysis conducted by Sonoma Technologies for CENRAP was referenced in the Nebraska SIP; NDEQ anticipated that surrounding states may request consultation to address any requirements needed to meet reasonable progress at their Class I areas. These consultations were accomplished and, because of minimal impact from Nebraska sources, the State of Nebraska was not requested by any state - beyond the Best Available Retrofit Technology (BART) determinations - for additional specific emissions reductions.

Modeling conducted to determine Nebraska's potential impact on Class I areas in other states showed the greatest contributions were to Class I areas in South Dakota, namely Badlands and Wind Cave National Parks. At these areas, nitrates comprised a slightly larger percentage than

sulfates in the baseline year of 2002 (NDEQ RH SIP, 2011, figure 11.14). Since that time, mitigation of nitrates has been implemented in the BART permits at the Nebraska source associated with impact on visibility at those areas – Gerald Gentleman Station (GGS) – which is approximately 300 km away.

On July 6, 2012, EPA issued rulemaking to partially approve and partially disapprove the Nebraska Regional Haze SIP. EPA disapproved the portion of the SIP that addressed BART requirements for SO_2 emissions from GGS and the state's long-term strategy insofar as it relied on that SO_2 BART determination. This rulemaking also promulgated a federal implementation plan (FIP) relying on the Cross-State Air Pollution Rule (CSAPR) to satisfy BART for SO_2 at GGS. In response to this partial disapproval, the Attorney General for the State of Nebraska filed petition with the 8th Circuit Court of Appeals for review. On February 3, 2016, the 8th Circuit Court rejected this petition. No additional measures have been required at this time to reduce pollutant emissions.

At present, no changes to the SIP are being proposed based on the following observations:

1. Analysis and trends presented in this progress report demonstrate reductions in SO_2, NO_x, and particulate matter (PM) emissions from major sources in Nebraska that were previously identified as potential contributors to visibility impairment at Class I areas in other states.
2. Nebraska is in attainment with respect to all National Ambient Air Quality Standards (NAAQS) for pollutants that contribute to regional haze and visibility impairment.
3. To date, regional haze five-year progress reports from states with Class I areas that have the potential to be impacted by emissions from Nebraska sources have made no mention of any impact from these sources.
4. States having Class I areas with the potential to be impacted by emissions from Nebraska sources have made no requests, to date, for specific emission reductions from sources within the state of Nebraska to meet reasonable progress goals (RPGs) for visibility at Class I areas within their borders.

The regional haze implementation process requires the submittal of a progress report five years following submittal of the initial regional haze SIP. Progress reports are also due five years following all subsequent comprehensive regional haze SIP revisions. This document constitutes NDEQ's five-year progress report on the initial regional haze SIP and fulfills all applicable obligations required by 40 CFR 51.308(g) and 51.308(h). The next comprehensive revision to the regional haze SIP is due July 31, 2021.

Regional Haze Rule and BART

Per the Guidelines for BART Determinations Under the Regional Haze Rule (40 CFR Part 51, Appendix Y), BART determinations were conducted by NDEQ for three pollutants: PM, NO_x, and SO_2. Two facilities in the state were determined to be subject to BART: GGS and Nebraska City Station (NCS). These determinations were detailed in the state's regional haze SIP in submitted in July 2011.

EPA ruled that Nebraska's determination of BART for GGS was insufficient, as was the long-term strategy proposed insofar as it was based upon that BART determination. EPA also determined that reliance on CSAPR was sufficient to address reasonable progress, and a FIP was promulgated on this premise. Because emissions at GGS are below the allotted SO_2 budget under CSAPR, no additional measures were required.

BART Permitting

On February 16, 2008, the Nebraska Air Quality Regulations (Title 129 of the Nebraska State Code) were revised to incorporate numerous changes, included the establishment of *Chapter 43: Visibility Protection*. This chapter incorporates the RHR by reference and required owners or operators of stationary sources subject to BART to prepare and submit a BART determination in accordance with the rule.

Per Title 129 Chapter 43 and the RHR, the Department is required to issue a permit to the source in accordance with Title 129 Chapter 17. This chapter details the requirements for construction permits for sources in the state. Because BART determinations were required, the BART decisions (i.e. the BART permits) were included in Nebraska's Regional Haze SIP.

At present, two facilities in Nebraska have been issued BART permits: GGS and NCS. Details of these permits (conditions, limits, etc.) are discussed further in this report under item 1, *Status of Measures in SIP*.

Introduction

Summary of Progress Report Elements
This report was assembled using the EPA guidance, *General Principles for the Five-year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans (Intended to Assist States and USEPA Regional Offices in Development and Review of the Progress Reports* (EPA OAQPS, April 2013). The sections of this report follow the required elements listed in the guidance and 40 CFR 51.308(g)(1)-(7) and 51.308(h).

A summary of each of the elements in the five-year progress report follows.

Status of Control Strategies in the Regional Haze SIP, 40 CFR 51.308(g)(1)
This element of the report is intended to give a qualitative description of the status of the emission reduction strategies in the Nebraska Regional Haze SIP. To summarize, controls identified in SIP have either been implemented or are expected to be implemented by 2018. Emission reductions are also being achieved by implementation of CSAPR.

Emissions Reductions from Regional Haze SIP Strategies, 40 CFR 51.308(g)(2)
This element of the report is intended to give a quantitative description of the emission reductions being achieved by sources addressed in the Nebraska Regional Haze SIP. Emissions of the pollutants in the state that contribute to visibility impairment are consistently decreasing.

Visibility Progress, 40 CFR 51.308(g)(3)
This element is not applicable to Nebraska, as there are no Class I areas within state borders.

Emissions Progress, 40 CFR 51.308(g)(4)
This element of the report presents a description of the overall emission reductions for pollutants affecting visibility impairment at Class I areas from sources within the state. Analysis of the data further demonstrates that sources within the state are achieving progress in emission reductions, thus diminishing the potential to impact visibility in Class I areas in surrounding states.

Assessment of Changes Impeding Visibility Progress, 40 CFR 51.308(g)(5)
This element of the report presents an assessment of any changes in conditions that limited or impeded the progress being made. The State did not experience significant changes that impeded its ability to reduce emissions or contribute to visibility progress.

Assessment of Current Strategy, 40 CFR 51.308(g)(6)
This element of the report presents an assessment of the ability of existing control measures and related control programs to achieve the 2018 visibility goals for Class I areas potentially impacted by sources in the state. Based on the emission reductions achieved to date, and the anticipation of continuing reductions and their positive effect on the RPGs in place, NDEQ asserts that the current Regional Haze SIP strategy is sufficient.

Review of Visibility Monitoring Strategy, 40 CFR 51.308(g)(7)
This element of the report presents a brief description of the monitoring strategy employed by the State, despite having no Class I areas within state boundaries. Nebraska continues to participate in the Interagency Monitoring of Protected Visual Environments (IMPROVE) program and meet its monitoring strategy requirements. Additionally, two new monitoring sites are in

place to monitor SO_2 emissions at NPPD Sheldon Station and OPPD North Omaha Station to meet requirements of the 2010 1-hour SO_2 NAAQS Data Requirements Rule (DRR).

Determination of Adequacy, 40 CFR 51.308(h)
The NDEQ has determined that the Nebraska Regional Haze SIP is sufficient based on evidence presented in this report; thus the State makes the following negative declaration, per 40 CFR 51.308(h):

Further revision of the existing Nebraska Regional Haze State Implementation Plan is not needed at this time.

REGIONAL HAZE PROGRESS REPORT ELEMENTS

I. 40 CFR 51.308(g)(1): Status of Control Strategies in the Regional Haze SIP

40 CFR 51.308(g)(1) requires that the five-year periodic report contain "*a description of the status of implementation of all measures included in the implementation plan for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the State.*"

There are a number of measures in place to meet the State's obligations in support of RPGs for visibility at Class I areas in other states impacted by Nebraska sources. Because the state has no Class I areas within its borders, RPGs were not required to be developed. Emissions reductions noted in this section are derived from state emissions inventory data and the Clean Air Markets Division (CAMD), discussed in Sections II and IV of this report.

A. Clean Air Interstate Rule (CAIR)/CSAPR

When the regional haze consultation process began, states relied on CAIR to address the transport of air pollutants to downwind states. CAIR covered 28 eastern states plus the District of Columbia, and was designed to reduce SO_2 emissions by an estimated 5.4 million tons and NO_x emissions by an estimated 2 million tons by 2015. In 2008, CAIR was remanded without vacatur so that EPA could remedy flaws in the rule. In 2010, EPA proposed CSAPR to replace CAIR. This rule would reduce emissions that contribute to ozone and/or fine particle pollution in other states.

Although Nebraska was not included in the final CAIR rulemaking, the state was subject to CSAPR, finalized in 2011, for control of fine particles (SO_2 and NO_x). Emission reductions required by the rule would result in reductions of 71% in SO_2 and 52% in NO_x over 2005 levels among states subject to CSAPR.

To address visibility at Class I areas affected by Nebraska sources covered by CSAPR, the State will continue to participate in consultation with other CENRAP states as necessary to address RPGs at Class I areas.

Currently, Nebraska is subject to CSAPR, and SO_2 and NO_x emissions to date have been below the annual emissions allowances, based on data acquired from the CAMD program database (see Section II for more information on Nebraska's participation in this program).

B. Mobile Source Related Emissions and Standards

A significant number of mobile sources contribute to Nebraska's overall emissions; thus, reducing emissions from these sources has contributed to improvement in visibility in the region. The mobile source rules discussed in the Nebraska Regional Haze SIP are addressed below, along with additional rules and programs.

1) Tier 2 Vehicle Emissions Standards and Gasoline Sulfur Control Requirements

EPA set standards for tailpipe emissions for all passenger vehicles, including SUVs, minivans, vans, and pick-up trucks beginning in 2004. This rule also requires reduced levels of sulfur in gasoline. The new tailpipe standards were set at an average of 0.07 grams per mile for NO_x. Vehicles weighing less than 6000 pounds were to be phased-in to this standard between 2004 and 2007, with medium-duty vehicles phased in in 2008.

During the period 2010-2014, Nebraska experienced a 6% reduction in NO_x emissions and a 57% reduction in SO_2 emissions from on-road sources. (Values used to determine reductions are presented in Tables 7 and 8).

2) Tier 3 Motor Vehicle Emission and Fuels Standards

This rule was promulgated in April 2014 and final technical amendments were issued on April 22, 2016. The rule was designed to reduce both tailpipe and evaporative emissions from passenger cars, light-duty trucks, medium-duty passenger vehicles, and some heavy-duty vehicles. Starting in 2017, Tier 3 sets new vehicle emissions standards and lowers the sulfur content of gasoline, considering the vehicle and its fuel as an integrated system. This will render emission control systems more effective for both existing and new vehicles and enable more stringent vehicle emissions standards. The tailpipe standards include different phase-in schedules that vary by vehicle class, but generally phase in between model years 2017 and 2025.

During 2010-2014, Nebraska experienced reductions in SO_2 and NO_x (as noted in item 1 above), and an 11% reduction in $PM_{2.5}$ emissions from on-road sources. (Values used to determine reductions are presented in Tables 7, 8, and 10).

3) Locomotives and Marine Engines

In June 2008, EPA finalized a rule to reduce emissions from diesel locomotives and marine propulsion engines. This rule included requirements to dramatically cut PM emissions from these types of engines. Amendments were issued in 2011 that revised and further clarified portions of the rule.

During the period of 2010-2014, Nebraska experienced reductions in PM emissions from non-road sources by approximately 26%. (Values used to determine reductions are presented in Tables 9 and 10).

4) Small Engines (Personal Watercraft; Lawn and Garden Equipment)

In 2008, EPA adopted new emission standards for marine spark-ignition engines and small land-based non-road engines, such as those in lawn and garden equipment. This rulemaking also adopted new evaporative emission standards for the equipment and vessels powered by these types of engines. These standards were designed to reduce volatile organic compound (VOC) and NO_x emissions by approximately 35%, and applied starting with the 2011 model year for Class II engines (above 225 cc) and in the 2012 model year for Class I engines (less than 225 cc, used in non-handheld applications). Amendments to this rule were issued in 2010, 2011, and 2015.

During the period of 2010-2014, Nebraska experienced reductions of 20% in VOC emissions and 28% in NO_x emissions from non-road sources. (Values used to determine reductions are presented in Tables 6 and 7).

C. National Emission Standards for Hazardous Air Pollutants (NESHAP) Maximum Achievable Control Technology (MACT) Standards

NESHAPs promulgated by EPA have been incorporated into Title 129. These standards are designed to achieve reductions in HAPs as well as SO_2, NO_x, and PM.

A number of sources within the state are subject to the MACT standards and in 2012, EPA promulgated the NESHAP for Coal- and Oil-Fired Electric Utility Steam Generating Units-Subpart UUUUU. This rule has been incorporated by reference into Title 129 Chapter 28 *Hazardous Air Pollutants; Emissions Standards*. These standards were designed to reduce emissions from power plants and result in benefits to visibility.

Nebraska has sources subject to each of these standards, and the State has and will continue to incorporate these rules into Title 129 as they are promulgated by EPA.

During 2010-2014, Nebraska experienced reductions by 4% in SO_2 emissions and 21% in NO_x from point sources; among electricity generating units (EGUs), emissions reductions were 5% for SO_2 and 33% for NO_x. (Values used to determine reductions are presented in Tables 7, 8, 12, and 13).

D. Visibility Requirements under the New Source Review and Prevention of Significant Deterioration (PSD) Program

Because the entire state of Nebraska is currently in attainment with the NAAQS, the provisions of the PSD program as described in 40 CFR 52.21(o), apply.

The following subsections of 40 CFR 52.21, published July 1, 2009, have been incorporated by reference into Title 129 Chapter 19 *Prevention of Significant Deterioration of Air Quality (PSD)*:

(b) (34), (35), (36), (37), and (38) Definitions related to clean coal technology demonstration projects;

(e) Restrictions on area classifications; and

(g) Re-designation.

40 CFR 52.21(o) *Additional Impact Analyses* (1) and (2) have been incorporated into Title 129 Chapter 19 § 022.

40 CFR 52.21(p) *Sources Impacting Federal Class I Areas* has also been incorporated by reference into Title 129 Chapter 19.

E. Measures to Mitigate the Impacts of Construction Activities

1) Nebraska set forth criteria by which construction permits are issued to sources in the state. These criteria are outlined in Title 129 Chapter 17 *Construction Permits – When Required*. This information, as well as required forms, is also available on the NDEQ website.

2) Fugitive dust is addressed in Title 129 Chapter 32 *Dust; Duty to Prevent Escape Of.* Section 002 of this chapter specifically addresses construction activities and prevention of visibility impairment.

3) PM and other residual deposits not regulated under an air quality control permit are addressed in Nebraska Title 119 *Rules and Regulations Pertaining to the Issuance of Permits under the National Pollutant Discharge Elimination System (NPDES)*. Although these regulations address storm water discharges, NPDES permits require entities to develop a pollution prevention plan containing best management practices to control erosion and runoff, and many of the best management practices employed to prevent erosion and runoff are also effective for preventing windblown dust.

F. Agricultural and Forestry Smoke Management

Nebraska is required by 40 CFR 51.308(d)(3)(v)(E) to consider smoke management techniques for the purposes of agricultural and forestry management in developing a long term strategy for regional haze. Title 129 Chapter 30 *Open Fires* addresses this topic. Emissions estimates for fires within Nebraska remain unchanged since 2011 and comprise only a small portion of emissions of the pollutants of concern.

G. Enforceability of Emission Limitations and Control Measures

Nebraska is required by 40 CFR 51.308(d)(3)(v)(F) to ensure that emission limitations and control measures used to meet RPGs are enforceable. NDEQ has ensured that all emission limitations and control measures are enforceable by adopting the appropriate rules into Title 129.

Other measures include the BART limits. Guidelines for BART determination under the Regional Haze Rule are contained in 40 CFR 51, Appendix Y, and have been incorporated into Title 129 Chapter 43 *Visibility Protection*.

BART permits issued by NDEQ contain the applicable emission limits and compliance schedules, which are federally enforceable. Emissions limits and compliance verification requirements were incorporated into construction permits for two sources in Nebraska (see Table 1) and have been incorporated into each facility's Title V operating permit when reissued.

The BART determination for SO_2 at GGS was disapproved July 6, 2012 (77 FR 40149) and a FIP was promulgated, relying on CSAPR to meet BART for SO_2.

Table 1: BART Sources, Limits, and Progress In Nebraska

Pollutant	Required Compliance Date/ Effective Date of Permit or Action	Determination/Emissions limits	Compliance Status
NCS – Unit #1			
PM		Existing controls and requirements. Electrostatic precipitator is subject to existing permit limit of 0.1 lb/MMBtu.	In place and operational.
NO_x	July 6, 2017 February 26, 2009	Install low NO_x burners with over-fired air. Permit limit is 0.23 lb/MMBtu.	Installation completed; operations resumed on April 14, 2011
SO_2		No additional controls. Permit limit is 1.2 lb/MMBtu.	Low-sulfur coal in use to comply with permit limit.
GGS – Units #1 and #2			
PM		Existing controls and requirements. Baghouses are subject to existing permit limit of 0.1 lb/MMBtu.	In place and operational.
NO_x	January 5, 2013 May 11, 2010	Install low NO_x burners with over-fired air.[1] Permit limit is 0.23 lb/MMBtu.	Installation completed; operations resumed on December 30, 2012
SO_2		No additional controls. Permit limit is 1.2 lb/MMBtu.	Low-sulfur coal in use to comply with permit limit.
	July 6, 2012 77 FR 40149	FIP promulgated, relies on CSAPR to meet BART.[1] GGS was included in the CSAPR Group 2 Trading Program for SO_2 (40 CFR 52.39 part 97, Subpart DDDDD.) Nebraska annual SO_2 Trading Budget Allotment is 68,162 tons/year (tpy)[2]	Emissions have not exceeded CSAPR budget allotment[3] since FIP became effective.[4]

[1] 77 FR 40149, July 6, 2012
[2] 77 FR 34830, June 12, 2012;
[3] SO_2 CSAPR allocations for GGS are 28,896 tpy. https://www.epa.gov/csapr/cross-state-air-pollution-rule-csapr-allowance-allocations-and-templates
[4] CAMD data shows GGS SO_2 emissions (tpy) as 26,438 (2012), 28,430 (2013), 24,484 (2014), 25,014 (2015), 22,768 (2016).

Emissions at these facilities have decreased since implementation of the BART limits. NCS completed the low NO_x burner installation in April 2011 and, by 2016, demonstrated emissions reductions of 16%. GGS completed installation of the low NO_x burners in late 2012 and, by 2016, had shown emission reductions of 24% (values used to determine reductions are presented in Table 17).

During the five-year progress period, SO_2 emissions at GGS have decreased by about 18%; further reductions of 7% have occurred as of 2016. Decreases in particulate emissions have also occurred at both facilities and, by 2016, GGS experienced reductions of about 8%; NCS had PM_{10} reductions of 20% (values used to determine reductions are presented in Tables 14 through 16).

The state is in attainment with NAAQS for these pollutants. State designations for SO_2, NO_x, and PM NAAQS were issued as follows:

2010 NO_2 NAAQS
February 17, 2012 (77 FR 9532)
No designated areas in Nebraska

2012 PM NAAQS
January 15, 2015 (80 FR 2205)
No designated areas in Nebraska

2010 1-hour SO_2 NAAQS
July 12, 2016 (81 FR 45039)
Areas around GGS and NCS designated as "Unclassifiable/Attainment" (Data Requirements Rule)

H. Nebraska Clean Diesel Grant Program

In 2008, NDEQ established the Nebraska Clean Diesel Grant Program to distribute funding received by EPA for the purpose of reducing diesel emissions. This funding was authorized by Congress in the Diesel Emissions Reduction Act, which was created as part of the Energy Policy Act of 2005.

Since its inception, the state's Clean Diesel Grant Program has received and awarded over $1 million and achieved estimated reductions of 1,225 tons per year of diesel pollutants and 115,995 gallons of diesel fuel usage.

During the period of 2010-2014, Nebraska experienced reductions in SO_2, NO_x, and PM emissions from on-road sources (specific reductions are noted in item B.2).

I. Source Retirement and Replacement Schedules

Some sources in the state have been retired, announced retirement, and/or been modified since the regional haze SIP was submitted in 2011. The following retirement and replacement activities have occurred or are in currently in progress:

1) OPPD – North Omaha Station

As part of the utility's future generation plan, OPPD shut down three of its five coal-fired units at the North Omaha Station as of March 2016. This facility received a one-year extension to meet the Mercury and Air Toxics Standards (MATS) Rule, as did the majority of other utilities nationwide.

These three units comprise OPPD's oldest main baseload plants and were taken offline for coal-burning as of April 2016. With the decommissioning of Fort Calhoun Nuclear Station, OPPD determined these units are needed as peaking units. They are presently available to run on natural gas until at least 2018. Since taken offline, they have not been used and are not expected to be operated unless demand dictates it is necessary.

The unit retirements were staggered to ensure safe cleanup of the highly combustible residual coal and coal dust from the storage bunkers. Each bunker holds about a half-day's supply of coal, and the residual was used in the remaining units until the bunkers were empty. Natural gas was used to stabilize the shut-down process and burn as much of the coal from the bunkers as possible.

The remaining Units 4 and 5 have been fitted with emissions control measures (dry sorbent and activated carbon injection), and will be refueled with natural gas in 2023.

Emissions at this facility, based on CAMD Data (Tables 16 and 17) for 2015-2016, show a decrease of 36% (SO_2) and 35% (NO_x).

No construction permit was required for this activity, and modifications to reflect these changes will be made to the operating permit upon reissue.

2) NCS

OPPD has installed stronger emissions controls on NCS Unit 1. This project, including the installation of three large storage silos, was initiated in October 2015. A construction permit was not required for this project. The silos are part of OPPD's compliance with the MATS rule for 2016, and hold the dry sorbent and the activated carbon that will be injected into the plant's flue gas streams. The dry sorbent, a powdered sodium (either sodium bicarbonate (baking soda) or trona), is injected and chemically reacts with acid gasses present in the flue gas, creating particles that are removed by the plant's electrostatic precipitator.

The activated carbon is used to control mercury emissions; mercury binds to the surface of the injected powdered carbon that is then removed by the electrostatic precipitator. Testing done at both plants has confirmed the injection process will reduce acid gases and mercury emissions below the limits established by the Boiler MATS rule. Performance testing was completed to verify compliance with the MATS, and the injection process was operational in February 2016.

Unit 2, which has been operational since 2009, has emissions controls that include scrubbers, high-efficiency burners, and a carbon injection system to reduce such pollutants as NO_x, mercury, SO_2, and ash.

Emissions at this facility, based on CAMD Data (Tables 16 and 17) for 2015-2016, show a decrease of 21% (SO_2) and 11% (NO_x).

Permit modifications to reflect the addition of dry sorbent injection to Unit 1 will be made to the operating permit for this facility at the time of reissue.

3) Sheldon Station

Construction was completed to raise the stack heights of Units 1 and 2 at Sheldon Station in Hallam, NE. Modeling was conducted to help determine necessary minimum stack heights to ensure attainment with the 2010 1-hour SO_2 NAAQS. A revised construction permit was issued to NPPD on April 15, 2016 for this project. The deadlines for stack height extensions (as per a consent order between NPPD and NDEQ) were July 2, 2016 and July 2, 2017 for Units 1 and 2, respectively (the stack height extension for Unit 2 would be exercised as an option should NPPD not elect to switch to hydrogen fuel for Unit 2 by December 2021). The extensions were completed on June 14, 2016 (Unit 1) and August 18, 2016 (Unit 2).

Based on CAMD data shown in Tables 16 and 17, emissions at Sheldon Station showed a decrease of 45% (SO_2) and 11% (NO_x) for the period 2015-2016. Because these units were shut down for a period of time during the stack extension project, future emissions data will be a better indicator of the reductions attributable to the project.

Additionally, NPPD has entered into partnership with Monolith Materials, which has plans to build a natural gas-based carbon black production facility adjacent to Sheldon Station. Sheldon proposes to utilize hydrogen, a co-product of Monolith's carbon black process, to replace coal as a fuel source for Unit 2, with an expected completion date for the conversion by the end of 2019. Conversion of Unit 2 to hydrogen fuel will essentially eliminate SO_2 and other emissions from this unit. Following assessment of the conversion at Unit 2 and sufficient hydrogen supply from Monolith, NPPD intends to convert Unit 1 to hydrogen fuel in the following years. Further discussion of this project will be included in the SIP for the next implementation period.

J. Anticipated Net Effect on Visibility Resulting from Projected Changes to Emissions

In accordance with 40 CFR 51.308(d)(3)(v)(G), NDEQ has addressed the net effect on visibility that will result from changes projected by in emissions from point, area, and mobile sources. It is anticipated that emissions from EGUs will continue to decrease due to projected changes and retirements, as well as full implementation of new federal rules and standards as discussed here. Likewise, implementation of NO_x controls at the EGUs subject to BART will result in emission reductions within the state.

K. Recent Federal Rules

Since the development of the state's initial regional haze SIP, EPA has promulgated standards that are anticipated to yield additional emissions reductions from sources within the state.

1) MATS

On December 16, 2011, EPA signed the MATS rule to reduce emissions of toxic air pollutants from power plants. Specifically, the MATS rule was designed to reduce emissions from new and existing coal and oil-fired EGUs. The rule establishes power plant emission standards for mercury, acid gases, and non-mercury metallic toxic pollutants. Since issuance of the final rule, numerous updates have been promulgated containing technical corrections, startup and shutdown procedures, and requirements for electronic reporting. EPA estimates the MATS will reduce acid gas and SO_2 emissions from power plants.

Nine EGUs in Nebraska are subject to the MATS rule, and requests for one-year extensions were approved for five of them. EPA approved all extensions and allowed an extended compliance deadline of April 16, 2016. NDEQ has received compliance demonstrations and notification from all EGUs subject to this rule.

As of September 27, 2013, information about the applicability of the MATS to sources in Nebraska, along with links to fact sheets, EPA documents, and the reporting form, were posted on the NDEQ website as part of the Air Toxics notebook. The MATS standard is planned for incorporation into Title 129.

2) Portland Cement Air Toxics Standards

On February 12, 2013, EPA promulgated the NESHAP for Portland cement manufacturing. The rule will maintain dramatic reductions of acid gases, PM, and total hydrocarbons from existing cement kilns across the country, while ensuring that emissions from new kilns remain low. Existing kilns must have complied with the standards by September 9, 2015 and, if needed, may have requested an additional year for compliance. Nationwide, EPA anticipates the rule will reduce hydrochloric acid emissions by 96%, PM by 91%, and total hydrocarbons by 82%.

The *Standards of Performance for Portland Cement Plants*, 40 CFR 60 Subpart F, has been incorporated in Title 129, Chapter 18 *New Source Performance Standards and Emission Limits for Existing Sources*. One source within Nebraska is subject to this standard; this source demonstrated compliance with PM emissions limits during testing in July 2015. Recently, the facility notified NDEQ of planned replacement of dust collectors beginning in March 2017, to improve efficiency in PM emissions control.

3) NAAQS

NO_2
On January 22, 2010, EPA strengthened the health-based NAAQS for NO_2, establishing a new 1-hour standard at a level of 100 ppb. On February 29, 2012 EPA designated all areas of the country as "Unclassifiable/Attainment" for the 2010 NO_2 NAAQS (77 FR 9532).

SO_2
On June 22, 2010, the EPA revised the 1-hour SO_2 NAAQS to a level of 75 ppb. In March 2015, the U.S. District Court for the Northern District of California approved a consent decree to settle a lawsuit filed by the Sierra Club and Natural Resource Defense

Council against EPA for failure to make additional attainment and nonattainment designations under the 1-hour SO_2 NAAQS. Under the consent decree, EPA agreed to promulgate rules making area designations in three "rounds" beginning in July 2016.

On August, 2015, EPA issued the DRR for the 2010 1-hour SO_2 standard, which applies to sources emitting more than 2,000 tpy of SO_2 not already designated in attainment with the 1-hour NAAQS; in Nebraska, this includes Sheldon Station, North Omaha Station, and Whelan Energy Center.

Under the consent decree, EPA issued its 120-day letter denoting initial designations in Nebraska on February 16, 2016. This letter indicated EPA's intention to designate affected source areas in Nebraska as "Unclassifiable/Attainment" with the exception of the area around Sheldon Station, for which EPA has indicated an intended designation as "Unclassifiable."

On July 12, 2016, EPA issued designations of "Unclassifiable/Attainment" for areas surrounding GGS and NCS (81 FR 45039).

A modeling analysis for Whelan Energy Center was submitted to EPA in January 2017 with a designation recommendation of "Attainment". Designations for this source are expected by December 31, 2017.

New ambient air quality monitors have been installed near Sheldon Station and North Omaha Station and were in operation by January 1, 2017. Designations for these sources will be issued by December 31, 2020.

PM2.5

On January 15, 2013, EPA strengthened the PM2.5 NAAQS, reducing the level of the annual standard from 15 $\mu g/m^3$ to 12 $\mu g/m^3$. On January 15, 2015, EPA designated the entire state of Nebraska as "Unclassifiable/Attainment" (80 FR 2205). On April 22, 2016, the PM2.5 Infrastructure SIP was submitted to EPA.

II. 40 CFR 51.308(g)(2): Emissions Reductions from Regional Haze SIP Strategies

40 CFR 51.308(g)(2) requires "*a summary of the emissions reductions achieved throughout the State through implementation of the measures described in paragraph (g)(1) of this section.*"

Emissions of NO_x and SO_2 from point sources in Nebraska were demonstrated to have the most contributions to visibility impairment at two Class I areas in South Dakota - Badlands and Wind Cave National Parks - as detailed in the Nebraska Regional Haze SIP. Reductions in these two pollutants are demonstrated here with data from the state and local emissions inventories.

These state inventories have been utilized as opposed to the National Emissions Inventory (NEI) because they include smaller sources (e.g. those contributing less than what the Air Emissions Reporting Rule (AERR) requires) and, therefore, represent a more comprehensive emissions estimate for the state. Additionally, data are available for the entire progress period through these inventories.

The source categories shown were established in the NEI starting in 2008. Since that time, NEI data continues to be compiled and grouped into five major categories: point, non-point, on-road, non-road, and event. The event category is used to compile day specific data from prescribed burning and wildfires.

The inventory data show that SO_2 emissions decreased by 3.6% over the five-year period (2010-2014), all sources combined.

Table 2: State Emissions Inventory - SO_2 (tons)

Source	2002	2010	2014	% change 2010-2014
Point	105,086	67,963	65,081	
On-Road	2761	476	203	
Non-Road	8879	1142	607	
Wild Fires	0.3	0	110	
Prescribed Fires	7	0	1054	
TOTALS	**116,733.3**	**69,581**	**67,055**	**-3.6%**

Reductions in NO_x emissions were also observed, with a 19.3% decrease for all sources combined.

Table 3: State Emissions Inventory - NO_x (tons)

Source	2002	2010	2014	% change 2010-2014
Point	101,620	48,066	37,998	
On-Road	94,045	52,841	49,532	
Non-Road	108,281	105,406	76,336	
Wild Fires	0.4	0	245	
Prescribed Fires	3	0	2284	
TOTALS	**303,949.4**	**206,313**	**166,395**	**-19.3%**

In 2002, the continuous emission monitors (CEMs) from the 13 units reporting to CAMD averaged between 5,000 and 6,000 tons of SO_2 per month (60,000-72,000 tpy) and about 4,000 tons of NO_x per month (48,000 tpy). Data from 2010 and 2014 show a reduction in emissions for both pollutants over the five-year period and are shown in Tables 4 and 5 (Source: Air Markets Program Data, https://ampd.epa.gov/ampd/). More recent CAMD data are shown as well, and indicate further reductions in emissions.

Reductions in EGU emissions over the progress period 2010-2014 were 4.9% for SO_2 and 34.3% for NO_x. BART construction permits for installation of low NO_x burner equipment, including an over-fire air port system, were issued to NCS in February 2009 and GGS in May 2010. Installation was completed at NCS, Unit 1, and the unit resumed operation on April 14, 2011. At GGS Units 1 and 2, installation was completed on July 9, 2012 and the units resumed operation on December 30, 2012. As of 2016, further significant reductions of both SO_2 and NO_x emissions have been achieved.

Table 4: Emissions Data - CAMD SO_2 (tons)

Facility	2010	2014	% change 2010-2014	2016	% change 2010-2016
Gerald Gentleman Station	29,741	24,484		22,768	
Whelan Energy Center	2301	2899		2019	
Lon D Wright Power Plant	1206	1595		590	
Nebraska City Station	14,296	16,134		14,722	
North Omaha Station	10,515	11,245		8,902	
Platte Generating Station	2365	1452		487	
Sheldon Station	3758	3242		1432	
Totals	**64,182**	**61,051**	**-4.9%**	**50,920**	**-20.7%**

Table 5: Emissions Data - CAMD NO_x (tons)

Facility	2010	2014	% change 2010-2014	2016	% change 2010-2016
Gerald Gentleman Station	13,164	8155		7233	
Whelan Energy Center	1079	1005		699	
Lon D Wright Power Plant	449	384		459	
Nebraska City Station	8830	5630		5287	
North Omaha Station	6765	5779		3818	
Platte Generating Station	1201	710		642	
Sheldon Station	5824	2850		1225	
Totals	**37,312**	**24,513**	**-34.3%**	**19,363**	**-48.1%**

Nebraska is subject to CSAPR SO_2 and NO_x budgets as set forth in the Technical Support Document (TSD) for the Final Revisions to the Transport Rule (June 2012). Emission budgets for 2014 for the state were 68,162 tons (SO_2) and 30,039 tons (NO_x). Nebraska emissions for SO_2 (61,051 tons) and NO_x (24,513 tons) were below the allotted CSAPR budgets noted above.

Decreases in PM emissions from the two EGUs subject to BART were demonstrated and are outlined in Sections IV and V, and are attributed to controls in place at those facilities.

III. 40 CFR 51.308(g)(3): Visibility Progress

40 CFR 51.308(g)(3) requires that "*for each mandatory Class I Federal area within the State, the State must assess the following visibility conditions and changes, with values for most impaired and least impaired days expressed in terms of 5-year averages of these annual values.*

> ***(i)*** *The current visibility conditions for the most impaired and least impaired days;*
> ***(ii)*** *The difference between current visibility conditions for the most impaired and least impaired days and baseline visibility conditions;*
> ***(iii)*** *The change in visibility impairment for the most impaired and least impaired days over the past 5 years".*

EPA's *General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans (April 2013)* states, "This requirement only applies to states with Class I areas within their borders."

Discussion on visibility progress at Class I areas impacted by sources in Nebraska are outlined in Section VI.

IV. 40 CFR 51.308(g)(4): Emissions Progress

40 CFR 51.308(g)(4) requires "*an analysis tracking the change over the past 5 years in emissions of pollutants contributing to visibility impairment from all sources and activities within the State. Emissions changes should be identified by type of source or activity. The analysis must be based on the most recent updated emissions inventory, with estimates projected forward as necessary and appropriate, to account for emissions changes during the applicable 5-year period.*"

In the Nebraska Regional Haze SIP, IMPROVE monitoring data for the 2000-2004 period was used to define baseline, natural, and 2018 conditions for each of the Class I areas potentially impacted by Nebraska sources.

Nebraska also relied upon Particulate Matter Source Apportionment Technology modeling (CAMx PSAT) to determine the state's contribution to other Class I areas.

In conjunction with CENRAP and EPA Region 7, Nebraska installed one IMPROVE protocol sampler at Nebraska National Forest County near Halsey (in the central part of the state), and another at Crescent Lake National Wild Life Refuge in the Panhandle of the state. Both of these monitors were in operation beginning in 2002. The IMPROVE monitor at Nebraska National Forest is the only monitor currently operating.

A. Emissions Inventory

NDEQ compiles a statewide air emissions inventory and submits the data to EPA's NEI database. States are required to report their emissions data to the NEI following the guidelines established in the AERR. This rule requires states to submit criteria air pollutant information every year as well as a more comprehensive set of data every three years. Nebraska also compiles an inventory for hazardous pollutant and greenhouse gas emissions and voluntarily submits this data to the NEI.

Each year, NDEQ inventories all Class I major sources and Class II synthetic minor facilities. The provisions of the AERR allow smaller, low-emitting sources to be inventoried once every three years for inclusion in the NEI. The smaller facilities that Nebraska inventories on a triennial basis include those permitted as Low Emitters, Permit By Rule, and No Permit Required sources.

Nebraska is required by 40 CFR 51.308(d)(4)(v) to conduct a statewide emissions inventory of pollutants that are reasonably anticipated to cause or contribute to visibility impairment in any mandatory federal Class I area. To help evaluate our impact on these Class I areas, a baseline emissions inventory has been established and trends in more recent inventories have been reviewed.

The source categories shown were established in the national emissions inventory starting in 2008. Since that time, NEI data continues to be compiled and grouped into five major categories: point, non-point, on-road, non-road, and event. The event category is used to compile day specific data from prescribed burning and wildfires.

The following tables summarize the emission trends in Nebraska by pollutant in specified source categories, based on the statewide emissions inventory. Inventory projections for 2018, as calculated for the 2011 SIP, are included for comparison. Although source categories and models used have changed since 2011, these projections provide a means

to demonstrate emissions progress.. The projections include reductions anticipated from BART controls for electric generating units (EGUs); the anticipated reductions were based on actual operating conditions and estimated control efficiencies from utilities.

Table 6: Source Emissions for VOC (tons)

Source	2002	2010	2011	2012	2013	2014	2018
Point	9592	8373	7470	7511	7279	7053	13,334
On-Road	31,845	22,491	27,998	27,195	26,393	25,590	18,862
Non-Road	21,919	17,738	17,094	16,145	15,196	14,247	14,611
Wild Fires	6	0	2496	2496	2496	2496	3,204
Prescribed Fires	105	0	25,302	25,302	25,302	25,302	3,204

Table 7: Source Emissions for NO_x (tons)

Source	2002	2010	2011	2012	2013	2014	2018
Point	101,620	48,066	48,841	40,101	40,067	37,998	56,190
On-Road	94,045	52,841	57,340	54,737	52,135	49,532	19,702
Non-Road	108,281	105,406	104,873	95,361	85,848	76,336	50,972
Wild Fires	0.4	0	245	245	245	245	679
Prescribed Fires	3	0	2284	2284	2284	2284	679

Table 8: Source Emissions for SO_2 (tons)

Source	2002	2010	2011	2012	2013	2014	2018
Point	105,086	67,963	75,048	65,673	69,583	65,081	82,193
On-Road	2761	476	206	205	204	203	236
Non-Road	8879	1142	872	784	695	607	226
Wild Fires	0.3	0	110	110	110	110	268
Prescribed Fires	7	0	1054	1054	1054	1054	268

Table 9: Source Emissions for PM_{10} (tons)

Source	2002	2010	2011	2012	2013	2014	2018
Point	11,744	7536	8964	9040	8493	8165	18,654
On-Road	3467	2216	2891	2817	2744	2671	432
Non-Road	6541	5570	5421	4992	4563	4135	3269
Wild Fires	4	0	1155	1155	1155	1155	5057
Prescribed Fires	43	0	11,555	11,555	11,555	11,555	5057

Table 10: Source Emissions for $PM_{2.5}$ (tons)

Source	2002	2010	2011	2012	2013	2014	2018
Point	2393	2529	2320	2660	3246	2921	8596
On-Road	2975	1744	1789	1707	1626	1545	432
Non-Road	6373	5229	5116	4710	4305	3899	2974
Wild Fires	3	0	979	979	979	979	3956
Prescribed Fires	36	0	9792	9792	9792	9792	3956

Point Source Emissions

The point source data for annual emissions shown in the tables above comes directly from the emission inventory questionnaires submitted from state sources to NDEQ, Lincoln Lancaster Health Department, and Omaha Air Quality Control (OAQC). Point source

information taken from the state and local inventories was used for comparison instead of the NEI totals because it represents a more comprehensive estimate of these emissions.

Specifically, point source data submitted to the NEI is filtered to include only medium to largest sources based on potential to emit (PTE) according to emissions thresholds outlined in the AERR. These PTE reporting thresholds are 100 tons per year or more for criteria pollutants with the exceptions of carbon monoxide (CO) (1000 tons/year) and lead (5 tons/year). NDEQ and the local agencies inventory point sources that are much smaller than what the AERR requires, thereby yielding more comprehensive statewide estimates. As a result of smaller sources being reported as actual data, the emissions totals in specific non-point categories are more accurate. When data is submitted, EPA is notified of the non-point categories covered to avoid double counting. For these reasons, an analysis of the state and local compiled point data is a better trend indicator than the point/non-point totals found in the NEI.

The point source data for the state shows a decrease in emissions over the five-year period 2010-2014. VOC emissions have declined 15.8%, NO_x emissions are down 20.9%, and SO_2 totals are lower by 4.2%. The particulate ($PM_{2.5}$) data show increased totals; however, this is attributed to the fact that data gathered from OAQC has become more complete only for the more recent years. Emissions reductions achieved over the progress period have exceeded the 2018 projections for all pollutants.

Mobile Source Emissions

Mobile source emissions for Nebraska were calculated by EPA for the NEI. The NEI on-road sources include emissions from on-road vehicles that use gasoline, diesel, and other fuels. These include emissions from light- and heavy-duty vehicles during operation on roads and highway ramps, and idling. The emission estimates are calculated by EPA using the Motor Vehicle Emission Simulator (MOVES) model. The NEI non-road sources include off-road mobile sources that use gasoline, diesel, and other fuels. These source types include locomotives, aircraft, marine, construction equipment, off-road vehicles and non-road equipment such as lawn and garden equipment.

The emission estimates calculated for mobile sources in 2002 showed a notable increase when compared to previous years. That increase was due to a change in mobile modeling data. Likewise, starting in 2011, modeling changes again produced significantly different estimates when compared to 2010. Overall, mobile emissions of the visibility impairing pollutants (VOCs, NO_x, SO_2, and PM_{10}) have decreased over the 2010-2014 period. The combined emissions for on- and off-road sources in 2010 were 207,880 tons compared to 173,321 tons in 2014, which represents a 16.6% decrease. Emissions data for the progress period show an increase over 2018 projections, which are attributed to changes in the modeling methods implemented after the 2018 projections were calculated.

Fire Emissions

In 2011, EPA developed new methods for estimating fire emissions which accounts for the significant change in data values in those categories. For Nebraska, the emission contributions from fires have been based on model parameters which include acres burned, types of fuel, fuel moistures, and burn efficiency. EPA has not changed these model inputs for Nebraska since 2011; therefore, without specific event data being compiled, these emission estimates have remained the same in recent years. This emissions category is expected to be more developed in future years.

Agricultural Source Emissions

The state of Nebraska has always been largely agricultural; thus, significant emission contributions from that sector have impacted the state's emissions profile. Ammonia emissions are most notable. Table 11 shows the ammonia emission totals and trends for Nebraska. The point ammonia category data was taken from the state and local annual inventory submittals. The other source categories were compiled by EPA for the NEI. For Nebraska, agriculturally related activities - such as livestock waste and fertilizer applications - represent a majority of the ammonia totals. For these categories, estimates have only been calculated for the comprehensive triennial NEI reporting years (including 2011 and 2014).

Evaluating ammonia emission trends is difficult because the estimation procedures for some of these sectors have been significantly improved in recent years, making comparisons to prior years difficult. In particular, for the largest source of ammonia in Nebraska, the animal waste ammonia emission calculation methodologies were changed and improved for the 2011 NEI. Overall reductions of 21% in ammonia emissions were demonstrated over the period 2011-2014.

Table 11: Ammonia (tons)

Source	2002	2010	2011	2012	2013	2014
Livestock	103,772		111,498			92,463
Fertilizer Application	63,351		69,469			50,138
Point	612	1929	767	542	2447	1366
On-Road	1035	766	841	817	793	769
Non-Road	44	65	65	62	59	56
TOTALS	**168,814**		**182,640**			**144,792**

EGU Emissions

EGUs emit the majority of the visibility impairing point source emissions in the state. Specifically, for the most recent complete set of emissions data (2014), the top seven (by emissions) power plants in the state have emitted 94.8% of the total SO_2 and 66.3% of the total NO_x reported from all point sources combined. Tables 12-15 outline the emission trends by pollutant over the last five years for each of these top EGUs. Emissions reductions in SO_2 achieved over the progress period have exceeded the 2018 projections.

Table 12: EGU SO_x Emissions (tons)

Facility	2010	2011	2012	2013	2014	2018
Gerald Gentleman Station	29,741	29,113	26,391	28,430	24,482	
Whelan Energy Center	2554	2996	2133	2131	2899	
Lon D Wright Power Plant	1532	1400	1510	2106	2232	
Nebraska City Station	14,296	17,335	16,766	16,911	16,134	
North Omaha Station	10,514	14,069	11,377	12,237	11,250	
Platte Generating Station	2365	2301	1813	1810	1452	
Sheldon Station	3758	4063	2760	2836	3243	
Totals	**64,760**	**71,277**	**62,750**	**66,461**	**61,692**	**75,617**

Table 13: EGU NO_x Emissions (tons)

Facility	2010	2011	2012	2013	2014
Gerald Gentleman Station	13,165	13,116	9498	8985	8156
Whelan Energy Center	1218	1356	898	983	1017
Lon D Wright Power Plant	866	845	898	1043	1012
Nebraska City Station	8556	6290	6161	6428	5630
North Omaha Station	6701	6742	5572	6258	5778
Platte Generating Station	1196	1170	918	845	746
Sheldon Station	5652	6294	3082	3500	2863
Totals	**37,354**	**35,813**	**27,027**	**28,042**	**25,202**

Table 14: EGU PM10 Emissions (tons)

Facility	2010	2011	2012	2013	2014
Gerald Gentleman Station	234	238	221	244	217
Whelan Energy Center	111	127	92	114	124
Lon D Wright Power Plant	179	167	168	169	165
Nebraska City Station	568	617	350	374	454
North Omaha Station	188	206	191	208	454
Platte Generating Station	34	35	30	32	21
Sheldon Station	15	13	12	12	13
Totals	**1329**	**1403**	**1064**	**1153**	**1448**

Table 15: EGU PM2.5 Emissions (tons)

Facility	2010	2011	2012	2013	2014
Gerald Gentleman Station	94	96	90	98	86
Whelan Energy Center	40	54	40	52	56
Lon D Wright Power Plant	105	101	101	100	99
Nebraska City Station	31	34	123	149	199
North Omaha Station	63	75	71	87	296
Platte Generating Station	12	13	11	12	7
Sheldon Station	1	1	1	1	2
Totals	**346**	**374**	**437**	**499**	**745**

During the 2010-2014 period, Whelan Energy Center in Hastings added a 220 MW coal-fired unit. This new unit began initial operation on October 26, 2010 and started fully operating in March of 2011. In 2014, the Title V permit for North Omaha station was renewed, and updated emissions calculations in support of that permit included condensable PM. The change in PM emissions from 2013-2014 is attributable to this inclusion, which was not part of previous inventories.

The predominant emission totals for these top seven EGUs show a decrease in SO_2 emissions of 4.7% and a much larger decrease of 32.5% in the NO_x totals.

B. CAMD

The top seven EGUs also report to CAMD, and emissions data shown in Tables 16 and 17 illustrate the downward trend in overall SO_2 and NO_x emissions for the progress period. Data for the two years following the progress period (2015-2016) show further progress.

Table 16: CAMD SO_2 (tons)

Facility	2010	2011	2012	2013	2014	2015	2016
Gerald Gentleman Station	29,741	29,113	26,438	28,430	24,484	25,014	22,768
Whelan Energy Center	2301	2944	2133	2131	2899	1,903	2019
Lon D Wright Power Plant	1206	1117	1095	1469	1595	987	590
Nebraska City Station	14,296	17,334	16,766	16,911	16,134	18,547	14,722
North Omaha Station	10,515	14,069	11,377	12,237	11,245	13,892	8,902
Platte Generating Station	2365	2301	1813	1810	1452	1,049	487
Sheldon Station	3758	4062	2760	2835	3242	2,598	1432
Totals	**64,182**	**70,940**	**62,382**	**65,823**	**61,051**	**63,990**	**50,920**

Table 17: CAMD NO_x (tons)

Facility	2010	2011	2012	2013	2014	2015	2016
Gerald Gentleman Station	13,164	13,117	9496	8984	8155	7,793	7233
Whelan Energy Center	1079	1343	902	968	1005	841	699
Lon D Wright Power Plant	449	449	441	399	384	410	459
Nebraska City Station	8830	6289	6161	6427	5630	5935	5287
North Omaha Station	6765	6742	5572	6258	5779	5841	3818
Platte Generating Station	1201	1176	923	803	710	663	642
Sheldon Station	5824	6535	3194	3616	2850	1760	1225
Totals	**37,312**	**35,651**	**26,689**	**27,455**	**24,513**	**23,243**	**19,363**

V. 40 CFR 51.308(g)(5): Assessment of Changes Impeding Progress

40 CFR 51.308(g)(5) requires "*an assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility.*"

As demonstrated in this report, Nebraska has experienced an overall decrease in SO_2 and NO_x emissions from anthropogenic sources within the state over the progress period 2010-2014. In summary, most emissions reductions achieved are generally ahead of schedule or better than the 2018 projections noted in the Nebraska Regional Haze SIP. No changes in anthropogenic emissions within the state have occurred that have limited or impeded progress in reducing pollutant emissions and improving visibility.

While increases in PM emissions were noted for point and on-road sectors, it was determined that their contribution to visibility impairment is not significant. As described in the 2011 SIP, units subject to BART were evaluated for impact to visibility impairment attributed to PM. The baseline case model results indicated that PM contributions from NCS Unit 1 and GGS Units 1 and 2 were responsible for less than 1% of the greatest deciview impairment at Class I areas.[1] NDEQ asserts that the increase in PM emissions do not impede the state's progress in improving visibility at Class I areas.

[1] Nebraska Regional Haze SIP (2011), Section 10.5.2, BART Determination Summary for PM (OPPD), and Section 10.6.1, BART Determination Summary for PM (NPPD)

VI. 40 CFR 51.308(g)(6): Assessment of Current Strategy

40 CFR 51.308(g)(6) requires "*an assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Federal Class I areas affected by emissions from the State, to meet all established reasonable progress goals.*"

During the Regional Haze SIP planning process, Nebraska worked through CENRAP to coordinate regional efforts to reduce visibility impacts at Class I areas in CENRAP states. For areas outside the CENRAP region, Nebraska consulted directly with other states that may have required emission reductions from Nebraska sources in order to improve visibility at their Class I areas. As part of the CENRAP planning process, regional modeling was performed to show the impact on several surrounding Class I areas from Nebraska emissions sources.

As noted in the Nebraska Regional Haze SIP, the EPA noted in its Proposed Rule on the Nebraska Regional Haze SIP (77 FR 12770) that two Class I areas in South Dakota were identified as having the most impact from Nebraska sources: Badlands National Park and Wind Cave National Park. Other Class I areas identified in the SIP were demonstrated to have negligible impact from the State. As stated in 77 FR 12770,

> "Nebraska's contribution to all other Class I areas was considerably less, and in no case greater than 1.9 percent in 2002 according to the PSAT modeling."

BART determinations conducted during Nebraska's regional haze SIP development process resulted in two sources identified as subject to BART: NCS and GGS. Contributions to visibility impairment from these sources were analyzed to determine their impact on Class I areas outside of the state, as illustrated in Table 18.

Table 18: Contribution to Visibility Impairment at Class I Areas by Nebraska Sources Subject to BART

Facility Name	Emission Units Subject to BART	Pollutants Evaluated in BART Determination	98th Percentile Contribution (dv)	Class I Area & Year of Impact
NCS	Unit #1	PM, NO_x, SO_2	0.933	Hercules Glades, MO (2001)
			0.556	Hercules Glades, MO (2002)
			0.686	Wichita Mtns, OK (2003)
GGS	Units #1 & #2	PM, NO_x, SO_2	2.845	Badlands, SD (2001)
			2.828	Badlands, SD (2002)
			3.121	Badlands, SD (2003)

SOURCE: Table 10.3, Nebraska Department of Environmental Quality State Implementation Plan for Regional Haze and BART, June 30, 2011

The remainder of this section will address visibility at Class I areas noted in the table above, as well as other Class I areas, and the contributions to visibility impairment from sources within Nebraska. This discussion indicates that the current strategies, as implemented in the 2011 SIP, have demonstrated progress in emissions reductions, and contribution to visibility improvement at affected Class I areas.

A. South Dakota: Badlands and Wind Cave National Parks

Badlands and Wind Cave National Parks are approximately 300km away from GGS. Per the 2002 data at these Class I areas, analysis of pollutants affecting visibility demonstrated that nitrates comprised a slightly larger percentage than sulfates. Mitigating nitrates, as accomplished by the BART permits, is an appropriate strategy to improve visibility in these areas.

Nebraska consulted directly with the state of South Dakota several times through phone and email correspondence during SIP development. NDEQ provided copies of the draft BART package for GGS because of its potential to impact visibility at Badlands and Wind Cave. Nebraska's BART plans were included in the South Dakota SIP (http://denr.sd.gov/des/aq/publicnotices/RegionalHazeSIPDraft.pdf) for which EPA issued a final rule of approval on April 26, 2012 (77 FR 24845).

Sources in Nebraska have been successful in achieving emission reductions, as demonstrated and discussed in previous elements of this report. Likewise, South Dakota Class I areas have demonstrated improvements in visibility and notable progress toward 2018 RPGs.

Table 19: Visibility Improvements at Badlands and Wind Cave National Parks, South Dakota

		Baseline	2009-2013	Improvement (dv)	2018 RPG	Progress to 2018 RPG as of 2013
Badlands	20% most impaired days	17.14	15.7	1.4	16.3	171%
	20% least impaired days	6.91	5.8	1.1	6.64	411%
Wind Cave	20% most impaired days	15.84	14.1	1.7	15.28	311%
	20% least impaired days	5.16	3.9	1.2	5.02	900%

SOURCE: Table 3-18 (Baseline, 2009-2013 values), and Tables 7-1(a) & (b) (2018 RPG values), South Dakota's Regional Haze State Implementation Plan Five-year Progress Report, December 18, 2015

As noted in South Dakota's Five-year Regional Haze Progress Report, while visibility progress is being made at both Class I areas, events outside of state borders - such as large wildfires and certain prescribed fires in-state - continue to have the largest impact on visibility. There were no requests from South Dakota for specific emissions reductions from sources in Nebraska to support reasonable progress for these Class I areas, and no sources in Nebraska were specifically mentioned as contributing to visibility concerns.

B. Other Class I Areas Examined for Potential Impact from Nebraska Sources

Visibility impairment at Class I areas other than those in South Dakota were determined in EPA-approved portions of the Nebraska Regional Haze SIP to be minimal or negligible. These areas are discussed here in the interest of completeness of the five-year progress report.

CENRAP identified early in its process that Nebraska was in its area of influence for nitrogen oxides. The central states determined whether a state was a contributor based on a combined analysis of four methodologies:

1. Positive Matrix Factorization (PMF)/Trajectories
2. Area of Influence (AOI)
3. PM Source Apportionment (PSA)
4. Q/D (the sum of annualize maximum hourly pollutant emissions (tpy) divided by distance (km) to Class I area)

If a state was found to be a major contributor in at least three of the four approaches, CENRAP concluded it was appropriate to include that state as a major contributor. Because Nebraska was found to only be a contributor based upon the AOI, and therefore did not meet the criteria of meeting at least three of the four methodologies, it was excluded as a major contributing state to visibility impairment in Class I areas in Missouri and Arkansas.

1) Missouri: Hercules Glades Wilderness Area

This Class I area is approximately 580 km from NCS. The PSAT modeling tool was used to determine the source of apportionment of light extinction-causing pollutants, and this model indicated that sulfates from elevated point sources was the most significant contributor.

NCS Unit 1 contributed 0.933 dv of visibility impairment at this Class I area, of which only 0.32% could be attributed to PM. This would indicate that the predicted impact is from a pollutant or pollutants other than PM. The modeling confirmed that the direct PM emissions from NCS do not significantly contribute to visibility impairment.

As demonstrated in the Nebraska Regional Haze SIP, Nebraska BART sources have an insignificant emission impact potential for the Hercules Glades Class I area. According to the COHA analysis conducted by Sonoma for CENRAP, sulfates are coming from the east, south, and south east of Hercules Glades Area, which further support the conclusion that strategies to reduce sulfate emissions from NCS would have insignificant impact on visibility improvement at this Class I area.

In Missouri's Regional Haze SIP (2009), Nebraska was identified as a member of CENRAP and, in Missouri's Five-year Progress Report (2014), as one of several states in which there were visibility data voids. However, there were no requests from Missouri for specific emissions reductions from sources in Nebraska to support reasonable progress for their Class I areas.

Improvements in visibility have been demonstrated for the Hercules Glades area as noted in Table 20, and acceptable progress made toward 2018 RPG.

Table 20: Visibility Improvement at Hercules Glades Wilderness Area, Missouri

Hercules Glades	Baseline	2008-2012	Improvement (dv)	2018 RPG	Progress to 2018 RPG as of 2012
20% most impaired days	26.7	23.5	3.2	23.06	88%
20% least impaired days	12.8	11.3	1.5	11.95	176%

SOURCE: Tables 7 and 8, State of Missouri Regional Haze Plan Five-year Progress Report, August 28, 2014 (Baseline and 2008-2012 values); Figures 8.1a and 8.1b, State of Missouri Regional Haze Plan, Feb 7, 2008 (2018 RPG values)

2) Oklahoma: Wichita Mountains Wilderness Area

Wichita Mountains Wilderness Area is the only Class I area within the state of Oklahoma, and is approximately 640 km south of the closest EGU in Nebraska (NPPD Beatrice Power Station) and 805 km south/southwest of NCS.

In 2003, NCS Unit 1 was determined to have contributed 0.686 dv to visibility impairment at this Class I area. As identified in the document *Oklahoma's Wichita Mountains Wilderness Area Regional Haze Planning* (Appendix 11.3, Nebraska Regional Haze SIP), Oklahoma identified early in its process that Nebraska was in its area of influence for NO_x. However, as detailed in Oklahoma's Regional Haze SIP (2010), the total contribution from Nebraska to visibility impairment at this Class I area was minimal and was projected to decrease from 1.11 mm^{-1} (2002) to 0.81mm^{-1} (a reduction of approximately 27%) by the year 2018.[2]

BART controls for NO_x on the NPPD and OPPD facilities along the eastern border of Nebraska were ultimately identified as requirements. Nebraska provided copies of the draft BART permits packages to the state of Oklahoma while on public notice. Oklahoma did not provide any comment or request additional controls for the initial planning period.

As of the date of this report, Oklahoma has not yet released its Regional Haze Five-year Progress Report. Visibility values in Table 21 were acquired from the Oklahoma Regional Haze SIP and the 2014 IMPROVE Summary Data for the WIMO1 monitoring site in the Wichita Mountains Class I area.

Table 21: Visibility Improvement at Wichita Mountains Wilderness Area, Oklahoma

Wichita Mountains	Baseline (2002)	2014 IMPROVE	Improvement (dv)	2018 RPG	Progress to 2018 RPG as of 2014
20% most impaired days	23.81	21.16	2.64	21.47	113%
20% least impaired days	9.8	9.26	0.54	9.23	95%

SOURCE: Tables II-11 and II-12 (Baseline values) and Figures IX-4 (2018 RPG - 20% worst) and IX-2 (2018 RPG – 20% best), Oklahoma Regional Haze Implementation Plan, February 2, 2010; IMPROVE Summary Data for 2014 , http://views.cira.colostate.edu/web/

[2] Oklahoma Regional Haze SIP, February 2, 2010, Table VIII-10.

3) Colorado: Rocky Mountain National Park (RMNP)

During the regional haze SIP planning, consultation, and BART permit development processes, Nebraska shared information with Colorado. This included emissions inventories, modeling, and the draft BART package for GGS, due to the facility's potential to contribute to visibility impairment at Class I areas in Colorado. The Colorado Department of Public Health and Environment (CDPHE) expressed concern in meeting visibility improvement goals at one specific area, RMNP. This Class I area is approximately 380 km southwest of GGS.

During development of the Nebraska SIP, the State of Colorado was consulted and directed the NDEQ to a website (www.coha.dri.edu) for data on baseline, modeling projections, source apportionment, and meteorological conditions for the region.

Meteorological analysis available on this website described the wind patterns at RMNP as predominantly from the northwest (nighttime), and from the southeast (daytime). This suggests that potential for significant impact to this Class I area from Nebraska sources was not likely.

In Colorado's Five-year Regional Haze Progress Report (November 2015) available on the Colorado.gov website, Nebraska was not listed as a contributor to visibility impairment in their state, nor did the State request specific emissions reductions from sources in Nebraska to support reasonable progress for their Class I areas. As shown in Table 22, RMNP has demonstrated improvements in visibility during the progress period, as well as significant progress toward 2018 RPGs.

Table 22: Visibility Improvement at RMNP, Colorado

Rocky Mountain NP	Baseline	2009-2013	Improvement (dv)	2018 RPG	Progress to 2018 RPG as of 2013
20% most impaired days	13.8	11.84	1.96	12.83	202%
20% least impaired days	2.28	1.58	0.7	2.06	318%

SOURCE: Table 2, Colorado Regional Haze Plan Five-Year Progress Report, November 19, 2015

The visibility impact from Nebraska sources affecting other Class I areas detailed in the Nebraska Regional Haze SIP was demonstrated to be less than 0.1 dv in the PSAT modeling. States were consulted during the SIP development process and there were no requests for additional emission reductions, other than BART determinations, from Nebraska sources to meet other states' RPGs.

Demonstrated emissions reductions in the state and visibility improvement observed at the affected Class I areas are presented in this report. The data and analyses illustrate that the strategies currently in place in the Nebraska Regional Haze SIP are sufficient to meet the State's obligations in support of the RPGs for Class I areas impacted by Nebraska sources.

VII. 40 CFR 51.308(g)(7): Review of Visibility Monitoring Strategy

40 CRF 51.308(g)(7) requires "*a review of the State's visibility monitoring strategy and any modifications to the strategy as necessary.*"

IMPROVE Monitoring

Although Nebraska has no Class I areas within its borders, visibility monitoring is conducted at two IMPROVE monitoring sites, described below and shown in Figure 1. These sites were employed to facilitate regional haze and pollution transport studies within Nebraska. The NDEQ provides administrative oversight of the operation of the IMPROVE sites at Halsey National Forest and, previously, at Crescent Lake National Wildlife Refuge. All monitors described have been operated on a continuous basis for $PM_{2.5}$ and differentiate the particles to elucidate the composition. Data summaries for these monitors can be found at http://views.cira.colostate.edu/web/.

Nebraska National Forest (ID: NEBR1)

The IMPROVE monitoring site at Nebraska National Forest near Halsey has been in operation since 2002, and is located in the Sandhills of central Nebraska. The primary purposes of the site are to evaluate regional haze and the contributions that may impact Class I areas. The Nebraska National Forest IMPROVE site is designed to be regional in scale, and its purpose is to elucidate background and transport of pollution into and out of the state.

Crescent Lake Wild Life National Refuge (ID: CRES1)

The IMPROVE monitoring site at Crescent Lake Wild Life National Refuge in the panhandle of Nebraska served as an additional site for evaluating background levels in rural Nebraska as well as understanding regional transport patterns. Like the Nebraska National Forest site, it began operation in 2002. (NOTE: This monitor was recently taken out of operation; however, data from the site is available through 2015.)

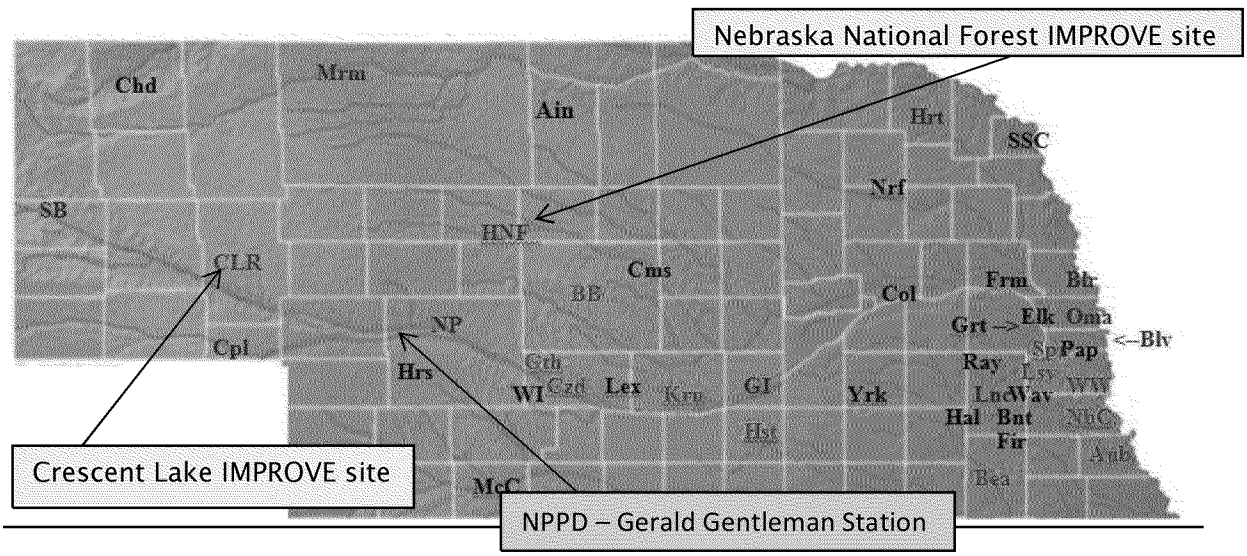


Figure 1: IMPROVE monitor locations in Nebraska. The location of GGS, as the source determined to have impacts on Class I areas in South Dakota (and the only source deemed significant in the Nebraska Regional Haze SIP) is shown for reference.

Ambient Monitoring
Ambient air monitoring is conducted at sites throughout Nebraska for the following pollutants:

- PM
- ozone
- carbon monoxide
- SO_2
- total reduced sulfur
- pollutant deposition
- regional haze

These monitoring activities are carried out or administered through the NDEQ with the Douglas County Health Department and the Lincoln Lancaster County Health Department operating the air monitoring sites in the Omaha and Lincoln metropolitan areas, respectively.

Ambient air quality data collected by the Nebraska Ambient Air Monitoring Network is available for use by governmental agencies as well as other public and private parties. Ongoing and potential uses for ambient air monitoring data include:

- Confirmation of attainment with the NAAQS and the Nebraska Air Quality standards set forth in Title 129;
- Local air quality modeling studies to evaluate local pollutant levels, potential emission source impacts, and monitoring needs;
- Regional and larger scale studies of potential pollutant impacts and pollutant precursor formation;
- Local, regional and national public health evaluations;
- Air quality regulation and standard evaluations;
- The calculation of Air Quality Index (AQI) values for the Omaha and Lincoln metropolitan areas; and
- Submittal to the national AIRNow web site, which provides a summary of air quality throughout the United States.

Class I Areas Impacted by Nebraska Sources
As discussed above in section VI, the Class I areas most potentially impacted by emissions from Nebraska sources are the Badlands and Wind Cave National Parks.

Monitors in these two Class I areas demonstrated improvements in visibility over the progress period noted in South Dakota's progress report (2009-2013) as well as continued improvement, as noted by 2014 values for both Class I areas (Table 23).

Table 23: Visibility Improvement at Badlands and Wind Cave National Parks

YEAR	Haze Index View (dv)			
	Badlands 20% most impaired days	Badlands 20% least impaired days	Wind Cave 20% most impaired days	Wind Cave 20% least impaired days
Baseline 2000-2004	17.1	6.9	15.8	5.1
2009-2013	15.7	5.8	14.1	3.9
DIFFERENCE	-1.4	-1.1	-1.7	-1.2
2014 IMPROVE	14.2	5.6	13.7	3.2
DIFFERENCE from baseline	**-2.9**	**-1.3**	**-2.1**	**-1.9**

SOURCE: Baseline (2000-2004) and progress period (2009-2013) data from South Dakota Regional Haze Five-Year Progress Report, Dec 2015; 2014 (IMPROVE) data from the Visibility Information Exchange Web System (VIEWS) IMPROVE Aerosol Data, http://views.cira.colostate.edu/web/

IMPROVE monitors in Nebraska, likewise, showed reductions in concentrations of pollutants contributing to light extinction at Badlands and Wind Cave National Parks, as well as improvements in haze index values during the progress period 2010-2014 (Table 24).

Table 24: Visibility Improvement at IMPROVE Monitor Sites in Nebraska

YEAR	Haze Index View (dv)			
	Crescent Lake 20% most impaired days	Crescent Lake 20% least impaired days	NE Natl Forest 20% most impaired days	NE Natl Forest 20% least impaired days
2010	17.6	5.9	19.7	5.9
2014	16.4	4.6	17	5.8
DIFFERENCE	**-1.2**	**-1.3**	**-2.7**	**-0.1**

SOURCE: IMPROVE data from the Visibility Information Exchange Web System (VIEWS) IMPROVE Aerosol Data, http://views.cira.colostate.edu/web/

In conclusion, improvements in visibility within the state of Nebraska and at Class I areas in South Dakota further support the assessment that the current strategies in place in the Nebraska Regional Haze SIP are sufficient to support reasonable progress.

VIII. 40 CFR 51.308(h): Determination of Adequacy

40 CFR 51.308(h) requires: *"…At the same time the State is required to submit any 5-year progress report to EPA in accordance with paragraph (g) of this section, the State must also take one of the following actions based upon the information presented in the progress report:*

(1) If the State determines that the existing implementation plan requires no further substantive revision at this time in order to achieve established goals for visibility improvement and emissions reductions, the State must provide to the Administrator a negative declaration that further revision of the existing implementation plan is not needed at this time.

(2) If the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another State(s) which participated in a regional planning process, the State must provide notification to the Administrator and to the other State(s) which participated in the regional planning process with the States. The State must also collaborate with the other State(s) through the regional planning process for the purpose of developing additional strategies to address the plan's deficiencies.

(3) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources in another country, the State shall provide notification, along with available information, to the Administrator.

(4) Where the State determines that the implementation plan is or may be inadequate to ensure reasonable progress due to emissions from sources within the State, the State shall revise its implementation plan to address the plan's deficiencies within one year."

Based on the data and analysis presented in this report, NDEQ has determined that the current strategy, as established in the Nebraska Regional Haze SIP, continues to be adequate to achieve visibility improvement and emissions reductions goals set forth by the Regional Haze Rule.

Therefore, Nebraska submits a negative declaration, i.e., no revisions of the 2011 SIP are necessary at this time.

Appendix A

Consultation with Federal Land Managers (FLMs)

In accordance with Title 40 of the Code of Federal Regulations (CFR), § 51.308(i)(2), the state must provide the Federal Land Managers with an opportunity for consultation, in person and at least 60 days prior to holding any public hearing this report for regional haze.

On June 8, 2016, NDEQ submitted Nebraska's Five-Year Progress Report to the following FLMs for review and comment:

1. Patricia Brewer, United States Department of Interior – National Park Service;
2. David Pohlman, United States Department of Interior – National Park Service;
3. Tim Allen, U.S. Fish and Wildlife Service;
4. Bret Anderson, United States Department of Agriculture – Forest Service;
5. Judy Logan, United States Department of Agriculture – Forest Service;
6. Trent Wickman, United States Department of Agriculture – Forest Service. and
7. Stephen Krabbe, Environmental Protection Agency.

No requests were made for consultation in-person or by telephone. Written comments were received from the Department of Interior – National Park Service (NPS), dated August 8, 2016. Responses to comments received are included in this appendix.

Wharton, Tracy

From: Wharton, Tracy
Sent: Wednesday, June 08, 2016 3:48 PM
To: twickman@fs.fed.us; david_pohlman@nps.gov; jlogan@fs.fed.us; patricia_F_Brewer@nps.gov; tim_allen@fws.gov; baanderson02@fs.fed.us
Cc: Wiese, Carrie; Schneider, Shelley; Crable, Gregory; Krabbe, Stephen
Subject: Regional Haze Five-Year Progress Report DRAFT for Nebraska
Attachments: NE 5yr RH Progress Report - RLM and Public Draft.pdf

Tracking:

Recipient	Delivery	Read
twickman@fs.fed.us		
david_pohlman@nps.gov		
jlogan@fs.fed.us		
patricia_F_Brewer@nps.gov		
tim_allen@fws.gov		
baanderson02@fs.fed.us		
Wiese, Carrie	Delivered: 6/8/2016 3:48 PM	Read: 6/8/2016 3:54 PM
Schneider, Shelley	Delivered: 6/8/2016 3:48 PM	Read: 6/14/2016 11:39 AM
Crable, Gregory		
Krabbe, Stephen		

The Nebraska Department of Environmental Quality has completed the Regional Haze Five-Year Progress Report for the state and I have attached a draft copy for your review. Our report addresses the required elements as detailed in 40 CFR Part 51.308(g) and specifically addresses impact from Nebraska sources on Class I areas within your state. This message invites your feedback on our report during the 60-day comment period available to Federal Land Managers of states with affected Class I areas.

We plan to make the report available for public comment beginning on July 8, 2016, and will end this comment period on August 11, 2016.

Please direct any comments or questions to me at tracy.wharton@nebraska.gov. We will be available to meet in person in our offices to discuss your feedback on the following date and times:

Thursday, August 11, 2016
8:00 AM – 11:00 AM
1:00 PM – 3:30 PM

We would also be glad to arrange a teleconference to discuss your comments before or on that date if you wish; if so desired, please contact me with dates and times that you are available.

Sincerely,

Tracy Wharton
NAAQS-SIP Coordinator - Grants, Planning, and Outreach Unit, Air Quality Division
Nebraska Department of Environmental Quality (NDEQ)
1200 N Street, The Atrium, Suite 400
PO Box 98922, Lincoln, NE 68509-8922
Phone: (402) 471-6410
tracy.wharton@nebraska.gov

Wharton, Tracy

From:	Microsoft Outlook
To:	twickman@fs.fed.us; david_pohlman@nps.gov; jlogan@fs.fed.us; patricia_F_Brewer@nps.gov; tim_allen@fws.gov; baanderson02@fs.fed.us; Crable, Gregory; Krabbe, Stephen
Sent:	Wednesday, June 08, 2016 3:48 PM
Subject:	Relayed: Regional Haze Five-Year Progress Report DRAFT for Nebraska

Delivery to these recipients or groups is complete, but no delivery notification was sent by the destination server:

twickman@fs.fed.us (twickman@fs.fed.us)

david_pohlman@nps.gov (david_pohlman@nps.gov)

jlogan@fs.fed.us (jlogan@fs.fed.us)

patricia_F_Brewer@nps.gov (patricia_F_Brewer@nps.gov)

tim_allen@fws.gov (tim_allen@fws.gov)

baanderson02@fs.fed.us (baanderson02@fs.fed.us)

Crable, Gregory (Crable.Gregory@epa.gov)

Krabbe, Stephen (Krabbe.Stephen@epa.gov)

Subject: Regional Haze Five-Year Progress Report DRAFT for Nebraska

Comments From National Park Service

United States Department of the Interior

NATIONAL PARK SERVICE
Air Resources Division
P.O. Box 25287
Denver, CO 80225-0287

TRANSMITTED VIA ELECTRONIC MAIL - NO HARDCOPY TO FOLLOW

N3615 (2350)

August 8, 2016

Tracy Wharton
Air Quality Division
Nebraska Department of Environmental Quality (NDEQ)
1200 N Street, The Atrium, Suite 400
PO Box 98922, Lincoln, NE 68509-8922

Dear Ms. Wharton:

Thank you for the opportunity to review and comment on Nebraska's draft Regional Haze 5-Year Progress Report. The Department of Environmental Quality (NDEQ) has addressed most of the requirements for the periodic progress report as outlined in 40 CFR §41.508 (g) and (h). There are no Class I areas in Nebraska; however, as stated in Nebraska's State Implementation Plan[1] and this Progress Report, emissions from Nebraska impact visibility at Badlands and Wind Cave National Parks in South Dakota and Rocky Mountain National Park in Colorado.

Nebraska's 2011 Regional Haze State Implementation Plan determined that the Best Available Retrofit Technology (BART) for sulfur dioxide (SO_2) emissions from the Gerald Gentleman Generating Station was no emission controls. BART controls for nitrogen oxide (NO_x) emissions were determined to be combustion controls (i.e., low NO_x burners) rather than the more effective post-combustion controls, Selective Catalytic Reduction. As we commented in 2009 and 2011[2] on Nebraska's Regional Haze State Implementation Plan and in 2012[3] on the EPA Federal Implementation Plan for Nebraska, the proposed controls would not mitigate visibility impacts due to the Gerald Gentleman Station at the three national parks.

[1] http://deq.ne.gov/NDEQProg.nsf/OnWeb/Haze
[2] Letter dated August 29, 2008 to Shelley Kaderly from Chris Shaver, Chief, Air Resources Division, National Park Service, and Sandra Silva, Chief, Air Quality Branch, US Fish and Wildlife Service; Letter dated January 14, 2011 to Shelley Schneider from Patricia Brewer, Air Resources Division, National Park Service and Sandra Silva, Air Quality Branch, US Fish and Wildlife Service
[3] Letter dated March 30, 2012 to Chrissy Wolfersberger, US EPA from Susan Johnson, Air Resources Division, National Park Service

Gerald Gentleman Generating Station is an electric generating plant with 1,365 megawatt capacity. According to the 2005 BART Guidelines,[4] presumptive SO_2 controls for electric utilities greater than 750 megawatts are 90% reduction or an emissions limit of 0.15 lb/mBtu. Nebraska is unique in not requiring the presumptive BART controls. Both the Western Regional Air Partnership and the Central Regional Air Partnership assumed presumptive SO_2 controls on Gerald Gentleman by 2018 in the regional air quality modeling that was used by states to set reasonable progress goals for visibility improvement by 2018.

As summarized in this draft progress report, in 2012 EPA disapproved Nebraska's SO_2 BART determination for Gerald Gentleman Station. In lieu of requiring SO_2 controls at Gerald Gentleman, EPA's Federal Implementation Plan[5] allowed Nebraska to rely on the statewide emissions limits set by the Cross State Air Pollution Rule (CSAPR) to satisfy SO_2 BART at Gerald Gentleman. Nebraska petitioned the 8th Circuit Court of Appeals for review. In 2016 the Court rejected Nebraska's petition and upheld EPA's decision that Nebraska could rely on the CSAPR in lieu of SO_2 controls at Gerald Gentleman.

NPS is still concerned that the impacts on national parks from SO_2 emissions in Nebraska, and Gerald Gentleman in particular, have not been mitigated. We ask that NDEQ acknowledge NPS concerns in this Progress Report. In 2005, Nebraska SO_2 emissions were 73,675 tons/year.[6] In 2015, statewide SO_2 emissions were 63,990 tons per year, below the CSAPR limit for Nebraska of 65,052 tons per year, but only 13% below 2005 levels. Gerald Gentleman reduced SO_2 emissions by 11% during the period 2005-2015.[6] Nebraska is not demonstrating reasonable progress in reducing SO_2 emissions. We will continue to ask for additional SO_2 reductions in the next regional haze planning period to mitigate visibility impacts at Badlands, Wind Cave, and Rocky Mountain National Parks.

Our additional recommendations to improve the documentation of visibility and emission trends in the Nebraska Regional Haze Progress Report are detailed below.

Executive Summary

NDEQ incorrectly reports that nitrates comprised a slightly larger percentage of visibility impairment than sulfates at Badlands and Wind Cave National Parks. In fact, the IMPROVE monitoring data demonstrate, and the enclosed graphics illustrate, that ammonium sulfate is the dominant pollutant contribution on the 20% worst visibility days at both national parks from the 2002 baseline to the present. These data demonstrate why the National Park Service (NPS) is asking for reductions in SO_2 as well as NO_x emissions in Nebraska.

NDEQ indicates that "States having Class I areas with the potential to be impacted by emissions from Nebraska sources have made no requests, to date, for emission reductions from sources within the state of Nebraska to meet reasonable progress goals for visibility at Class I areas within their borders." In fact, the Colorado Department of Health and the Environment made three requests[7] to Nebraska to implement flue gas desulfurization for SO_2 BART controls and

[4] 70 Federal Register 39104
[5] 77 Federal Register 40150
[6] See attached chart from Clean Air Markets Program Data, https://ampd.epa.gov/ampd/
[7] Letters dated June 23, 2009; January 21, 2011; and April 25, 2014

Selective Catalytic Reduction for NO_x BART controls at Gerald Gentleman Station to reduce impacts at Rocky Mountain National Park. We ask that NDEQ acknowledge Colorado's requests in this Progress Report.

Section I Status of Control Strategies
On page 6, Section A, please clarify that the comparison of 71% reduction in SO_2 and 52% reduction in NO_x due to CSAPR refers to all CSAPR states, not Nebraska. On page 10, Table 1, footnote 2 is missing, please clarify.

Section II Emissions Reductions from Regional Haze SIP
Relevant to Tables 2-10, please include emissions from the area source category for all pollutants and describe the diverse source sectors that are represented by area sources. Please clarify if 2002 wildfire and prescribed fire emissions are five year average for 2000-2004 or single year. Please clarify the data source for 2010-2014 wildfire and prescribed fire emissions. Why do the values not change by year?

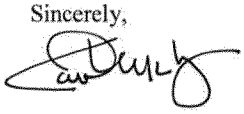
Please include the 2018 emission inventory projections to demonstrate that emissions are below or on track to be below the 2018 levels that were used by CENRAP and WRAP states to set reasonable progress goals.

Section III Visibility Progress
Please include visibility trends for the Class I areas discussed in Section VI as impacted by emissions from Nebraska. Data are readily available at http://views.cira.colostate.edu/fed/.

Section VIII. Determination of Adequacy
We agree that electric generating units in Nebraska are meeting the requirements of the CSAPR and that the 8th District Court agreed that with EPA's determination that reductions under the CSAPR met the requirements for BART at Gerald Gentleman. We do not agree that reasonable progress has been made in Nebraska in reducing SO_2 emissions. We will continue to request additional SO_2 controls in Nebraska in the next Regional Haze planning period.

We appreciate the opportunity to work with NDEQ to improve visibility in our Class I national park and wilderness areas. If you have questions, please contact Pat Brewer of my staff at patricia_f_brewer@nps.gov or 303-969-2153.

Sincerely,

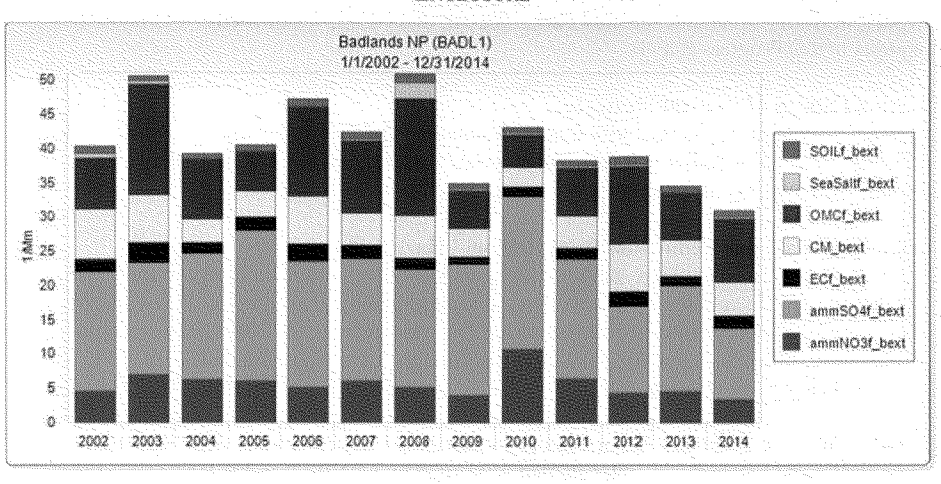


Carol McCoy
Chief, Air Resources Division

Enclosure

cc: EPA Region 7

ENCLOSURE


Badlands NP (BADL1)
1/1/2002 - 12/31/2014
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15
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30
35
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45
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2002
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ammSO4f_bext
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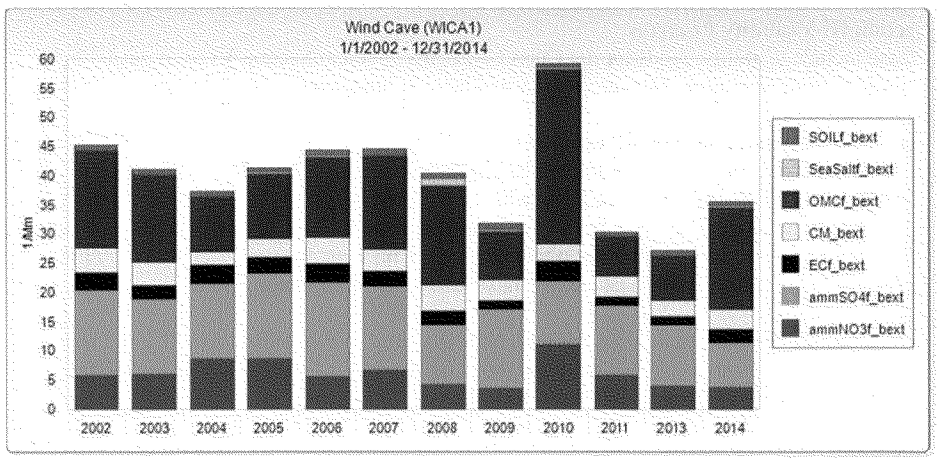
Wind Cave (WICA1)
1/1/2002 - 12/31/2014
1/Mm
0
5
10
15
20
25
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35
40
45
50
55
60
2002
2003
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2007
2008
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2011
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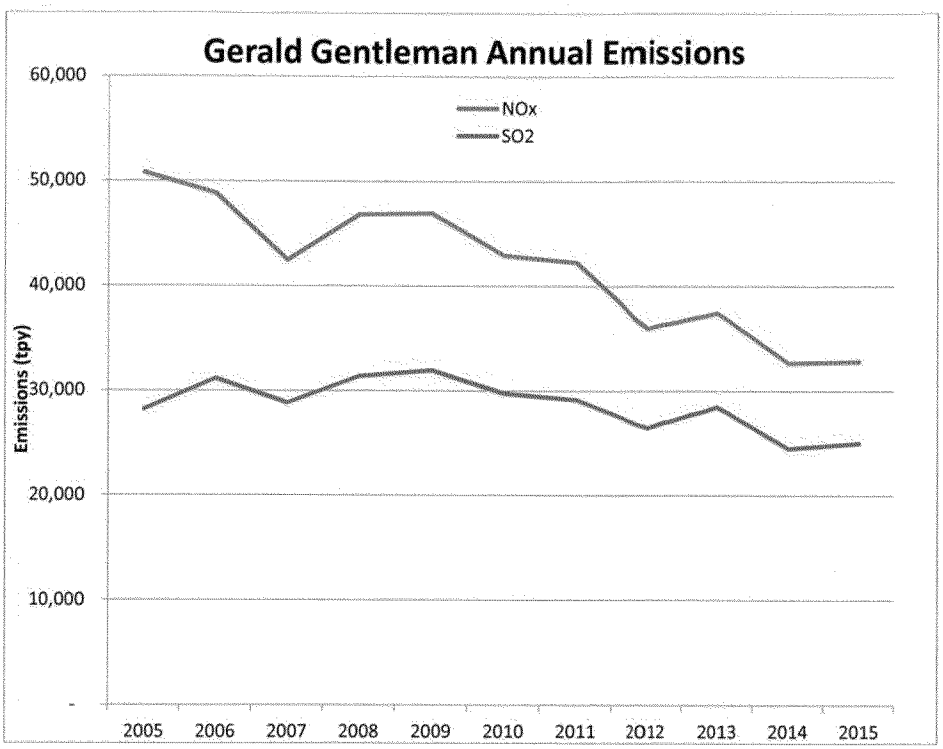
ECf_bext
ammSO4f_bext
ammNO3f_bext


Gerald Gentleman Annual Emissions
60,000
50,000
40,000
30,000
20,000
10,000
-
Emissions (tpy)
NOx
SO2
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015

5

Responses to National Park Service comments

1. ***NPS expressed concerns that impacts on national parks from SO_2 emissions in Nebraska, specifically GGS, have not been mitigated. They state that reasonable progress is not being demonstrated and ask for additional reductions in SO_2 in the next planning period.***

Response 1

NDEQ acknowledges these concerns expressed by NPS as well as their request for additional reductions in the next planning period.

GGS has reduced SO_2 emissions by 17.7% over the period 2010-2014, and by 23.8% over the period 2002-2014. This demonstrates a downward trend in SO_2 emissions and that is expected to continue. (Values used in these calculations were taken from the NDEQ RH SIP, 2011, Table 8.4, and this progress report, Table 16.)

At present, GGS is in compliance with their current operating permit (issued February 27, 2015), as confirmed by CEMs reports submitted to NDEQ. An annual compliance inspection conducted on September 14, 2016 detected no violations. Further, modeling conducted in September 2015 demonstrated attainment with the 2010 1-hour SO_2 NAAQS, and on July 12, 2016, the area around GGS was designated as Unclassifiable/Attainment (81 FR 45039).

In consideration of the above-noted compliance and designation, as well as improvements in visibility at Class I areas impacted by sources in Nebraska, no additional controls for GGS are planned at this time.

In preparation for the next planning period, NDEQ will continue to evaluate SO_2 emissions sources and their impact on Class I areas.

2. ***NPS stated that NDEQ incorrectly reported that nitrates comprised a larger percentage of visibility impairment than sulfates at Badlands and Wind Cave National Parks.***

Response 2

The statement that nitrates comprised a larger portion than sulfates at these parks (p. 1) was taken from the 2011 NDEQ Regional Haze SIP, section 11.1 (p. 81). It is based on the CENRAP PSAT Modeled extinction (20% worst days) attributed to Nebraska for the baseline year of 2002 (RH SIP, figure 11.14). This statement was used to describe data relied upon for the initial SIP and as the basis for nitrate mitigation, as has been done via the BART permits for GGS and NCS. Clarification has been noted in the report.

3. ***NPS addressed the portion of the Executive Summary of Nebraska's draft report which states,***

> ***"States having Class I areas with the potential to be impacted by emissions from Nebraska sources have made no requests, to date, for emission reductions from sources within the state of Nebraska to meet reasonable progress goals for visibility at Class I areas within their borders."***

Commenters noted that the State of Colorado has repeatedly commented on emissions impacts from GGS and referenced three letters (from 2009, 2011, and 2014) that address these concerns. They asked that NDEQ acknowledge these requests.

Response 3

NDEQ acknowledges the receipt of comments from Colorado, as noted by NPS, addressing emission reductions.

CDPHE addressed emission impacts from GGS, as shown in copies of letters submitted in 2009, 2011, and 2014. These letters address CDPHE requests NDEQ to,

> "review and reconsider SO_2 controls at GGS...to help Colorado make progress towards the visibility improvement goals at Rocky Mountain National Park." (June 23, 2009),
>
> "consider these comments as it evaluates SO_2 and NO_x controls at GGS...in part to help Colorado make progress towards the visibility improvement goals at Rocky Mountain National Park." (January 21, 2011), and
>
> "consider more efficient SCR NO_x controls if they are determined to be cost effective and appropriate" (April 25, 2014).

NPS also offered comments on emission impacts from GGS in 2010, 2011 and 2012, discussing the lack of controls for SO_2 at GGS and disagreement with the SO_2 BART determination for this source. NPS reasoned that Class I areas in South Dakota, Colorado, Oklahoma, and Missouri would likely not meet RPGs because presumptive BART controls were used in the modeling that supported those RPGs, yet no SO_2 controls were installed as Nebraska was allowed to rely on CSAPR to satisfy SO_2 BART at GGS.

All comments received from both CDPHE and NPS were taken in to consideration by NDEQ during the review of SO_2 and NO_x control measures for GGS, development of the 2011 SIP, and during this most recent review of the Nebraska Regional Haze SIP. More detailed discussion regarding GGS (such as impact on RMNP, SO_2 controls, etc.) is provided in Response 2 under Comments from Colorado DPHE.

Regarding other Class I areas impacted by Nebraska sources, visibility conditions at these areas are meeting or better than the RPG glide path values. These improvements, with respect to the 2018 RPGs, have been added to Tables 19-22 in section VI of the progress report.

4. ***NPS requested clarification that the comparison of 71% in SO_2 and 52% reduction in NO_x due to CSAPR refers to all CSAPR states, not just Nebraska (Section I).***

Response 4
This clarification has been included in Section I of the report.

5. ***NPS noted that footnote 2 (Table 1, p. 10) is missing.***

Response 5
Footnote 2 has been included under Table 1.

6. ***NPS requested that area source emissions be included (along with a description of source sectors represented).***

Response 6
The source categories shown in Section II were established in the NEI starting in 2008. Since that time, NEI data continues to be compiled and grouped into five major categories: point, non-point, on-road, non-road, and event. The event category is used to compile day-specific data from prescribed burning and wildfires.

A description of the source sectors represented is included in Section II.

7. ***NPS requested clarification on 2002 fire emissions (if this is a five-year average or single year emissions), and the data source for 2010-2014 wildfire emissions, and why the values do not change by year.***

Response 7
The 2002 fire emissions data shown in Tables 2 and 3 are single-year totals, not five-year averages. The data source for all wildfire and prescribed fire emissions is the NEI. The totals for these categories of emissions will appear to remain unchanged for a number of years until a new estimate is established by EPA. In fact, as new models and information become available, the emissions from prior years will be recalculated. As a result, the year-to-year trends and overall progress may be difficult to assess.

8. ***NPS requested inclusion of the 2018 emission inventory projections to demonstrate that emissions are below/on track to be below those used by CENRAP and WRAP states to set RPGs.***

Response 8
Emissions inventory projections for 2018 have been included in Tables 6-10. Projected emissions for 2018 were not available for each individual EGU, so a cumulative projection for all EGUs was used for comparison. Reductions anticipated from BART controls for EGUs

were included in these projections; anticipated reductions were based on actual operating conditions and estimated control efficiencies from utilities.

9. NPS requested visibility trends for Class I areas impacted by Nebraska sources be included in the report.

Response 9

In EPA's *General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans (April 2013),* Section II.C. states:

"This requirement only applies to states with Class I areas within their borders."

Visibility improvements at the Class I areas impacted by sources in Nebraska are outlined in Section VI of the report.

10. NPS disagrees that reasonable progress has been made in reducing SO_2 emissions in Nebraska.

Response 10

This comment is addressed, with respect to GGS, in Response 1 above. With regard to the state as a whole, SO_2 emissions have decreased significantly from point, on-road, and non-road sources - by 38%, 93%, and 93%, respectively - for the period 2002-2014. (Values used in these calculations were taken from this progress report, Table 8.)

Wildfire and prescribed fire SO_2 emissions show increases which are attributed to the new methods implemented in 2011 for calculating their contribution (these are discussed further in Response 7 above). Despite these increases, an overall decrease of 43% in SO_2 emissions (2002-2014) has been demonstrated for the state. (Values used in this calculation were taken from this progress report, Table 8.)

Appendix B

Notification of Draft Report, Comments received, and NDEQ responses

On July 11, 2016, NDEQ notified state contacts in CENRAP states, as well as contacts in the two Western Regional Air Partnership (WRAP) states (Colorado and South Dakota) in which Nebraska sources impact visibility, that the Five-Year Progress Report was posted and available for public comment.

The official public notice was made on August 5, 2016, and the progress report was posted on the NDEQ website. NDEQ requested that comments be submitted by September 7, 2016.

Comments were received from Colorado Department of Health and Environment (CDPHE), dated August 5, 2016. Responses to comments received are included in this appendix.

Additional public comments were received from the National Parks Conservation Association (NPCA)/Sierra Club, dated August 11, 2016. Responses to comments received are included in this appendix.

A public hearing was held on September 7, 2016, from 2:30-3:30 PM, at the NDEQ Offices, room 424. Public hearing documents are included in Appendix C.

One individual testified on behalf of the Sierra Club and submitted a petition signed by Sierra Club members from Colorado and Nebraska. The petition included individual comments from signers.

One individual testified on behalf of Nebraska Wildlife Federation and the Nebraska Farmer's Union, submitting a letter on their behalf.

Comments received have been addressed in this appendix.

Welcome
to the Nebraska Department of Environmental Quality

Public Notice Information

Program Name	Air
NDEQ Facility ID	0
Name of Applicant	Regional Haze Five-Year Progress Report
Location	Statewide
Nearest City	Statewide
Link to Public Notice Documents	
Link to view all program documents	May be slow to load depending on the number of documents
Permit type	
Comment Start Date	August 5, 2016
End of Comment Period	September 7, 2016

Draft Regional Haze Five-Year Progress Report Available Online for Public Comment
Hearing Scheduled September 7 in Lincoln

August 5, 2016 - The Nebraska Department of Environmental Quality's draft Regional Haze Five-Year Progress Report is now available for public review and comment. The public comment period has been extended to September 7, 2016.

The Regional Haze Progress Report describes the visibility impact on Class I areas (national parks and wilderness areas) from sources in Nebraska. The Regional Haze Rule requires progress reports at five-year intervals following submission of a Regional Haze State Implementation Plan (SIP).

During the 30-day public comment period, written comments regarding this Report may be submitted to the Nebraska Department of Environmental Quality (NDEQ) at the mail or email addresses below. An additional opportunity for comment will be available at a public hearing scheduled for Wednesday, September 7, 2016 from 2:30-3:30 PM at the NDEQ offices, 1200 N Street, Lincoln, Room 424. All comments received through 3:30 PM on September 7, 2016 will be considered.

Upon finalization, NDEQ will submit the Regional Haze Five-Year Progress Report to EPA Region 7 for review and approval/disapproval as required by the Regional Haze Rule.

The draft Report is provided below.

Comments may be submitted to:

Nebraska Department of Environmental Quality
Air Quality Division

ATTN: Tracy Wharton
P.O. Box 98922
Lincoln, NE 68509-8922

NDEQ.AirQuality@nebraska.gov

(See attached file: NE 5yr RH Progress Report - RLM and Public Draft.pdf)

Size	File Name
865 KB	NE 5yr RH Progress Report - RLM and Public Draft.pdf

Comments From Colorado DPHE

COLORADO
Department of Public Health & Environment

Dedicated to protecting and improving the health and environment of the people of Colorado

August 5, 2016

Nebraska Department of Environmental Quality
Attn: Tracy Wharton
P.O. Box 98922
Lincoln, NE 68509-8922

Re: *State of Colorado Comments on Nebraska Draft Regional Haze Five-Year Progress Report*

To Whom It May Concern:

We appreciate the opportunity to review and comment on the Nebraska Department of Environmental Quality's draft Regional Haze Five-Year Progress Report.

The regional haze rule requires states to implement cost-effective strategies to maintain and improve visibility in our nation's national parks, monuments and wilderness areas. Implementation of the rule has presented significant challenges and opportunities for states, and other stakeholders.

The Executive Summary of Nebraska's draft report provides in part: "States having Class I areas with the potential to be impacted by emissions from Nebraska sources have made no requests, to date, for emission reductions from sources within the state of Nebraska to meet reasonable progress goals for visibility at Class I areas within their borders."

The State of Colorado has repeatedly commented on emissions impacts from the Gerald Gentlemen Station on Class I areas in Colorado. Colorado submitted letters to Nebraska dated June 23, 2009, January 21, 2011, and April 25, 2014. Those letters are attached and incorporated herein for reference. To summarize, modeling indicates that emissions from the Gerald Gentlemen Station adversely impacts visibility at Rocky Mountain National Park, as well as the Great Sand Dunes National Park and Preserve.

Despite its significant sulfur dioxide (SO2) emissions, the Gerald Gentleman Station does not have SO2 controls. EPA partially disapproved Nebraska's regional haze State Implementation Plan, and determined that SO2 emission controls (e.g., flue gas desulfurization) were cost-effective and feasible. The Eight Circuit Court of Appeals denied Nebraska's petition for review of EPA's decision earlier this year. Moreover, it is not clear how EPA's reliance on the Interstate Transport Rule, without controls at Gerald Gentlemen Station, will address Colorado's concerns.

Nebraska's draft report suggests that the potential for significant impact to Rocky Mountain National Park from Gerald Gentlemen is unlikely. Colorado respectfully disagrees. We have seen some improvements in visibility at Rocky Mountain National Park, but those improvements have not been aided by emission reductions from Gerald Gentlemen Station. Moreover, although we are currently meeting the regional haze reasonable progress goal for Rocky Mountain National Park, further emission reductions are needed to make progress towards the 2028 uniform progress goal in the

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John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

COLORADO
Department of Public Health & Environment

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second planning period regional haze SIP. We believe that further emission reductions from Gerald Gentleman Station, particularly via installation of cost-effective and feasible SO2 controls, would assist Colorado in meeting its reasonable progress goals in the future.

Thank you very much for considering these comments.

Sincerely,

William C. Allison V
Director, Air Pollution Control Division

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John W. Hickenlooper, Governor | Larry Wolk, MD, MSPH, Executive Director and Chief Medical Officer

STATE OF COLORADO

John W. Hickenlooper, Governor
Larry Wolk, MD, MSPH
Executive Director and Chief Medical Officer

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Colorado Department
of Public Health
and Environment

April 25, 2014

Robert Sheeder
Operating Permit Unit Supervisor
Air Quality Division
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, NE 68509-8922

RE: Comments on NDEQ proposed permit revision of the NOx emission controls for Nebraska Public Power District - Gerald Gentlemen Station – Units 1 and 2

Dear Mr. Sheeder,

The Air Pollution Control Division of the Colorado Department of Public Health and Environment (the Division) appreciates the opportunity to comment on Nebraska Department of Environmental Quality's (NDEQ's) proposed permit revision of the NOx emission controls associated with Best Available Retrofit Technology (BART) on the Nebraska Public Power District (NPPD) - Gerald Gentlemen Station (GGS).

GGS is located about 375 kilometers (235 miles) from Rocky Mountain National Park, a Class I area known for its spectacular mountain vistas, clean waters, and alpine tundra. Although the distance between the Park and GGS is substantial, the visibility impacts at the Park are indeed measurable at over 1 deciview[1]. The nitrate particulates associated with visibility impairment attributed to GGS also contribute to nitrogen deposition in the Park. This is of particular concern because the Park experiences nitrogen deposition rates over 13 times higher than natural conditions, or pre-industrial levels. Excess nitrogen deposition can stress the Park's fragile ecosystem, resulting in shifts in alpine tundra plant species, reduced biodiversity, increased potential for insect and disease outbreaks, and reduced resilience in adapting to climate change.

GGS operates two similar sized pulverized coal-fired boilers and is the largest electricity generating plant in Nebraska at 1,365 MW that averages over 10,500 tons/year of NOx emissions[2]. A review of the proposed permit changes to GGS indicates that NDEQ proposes improved NOx controls on unit 2 (low NOx burners and over-fire air) and no changes to the existing low NOx burners and over-fire air on unit

[1] Based on information provided on NDEQ website – CALPUFF modeling analysis of pre-BART emissions (3-year average 2001-2003)
[2] Based on EPA Clean Air Markets Division (CAMD) data over the period 2011-2013

1. Although the Division is encouraged by the modest NOx reductions associated with the application of common pre-combustion controls, much greater reductions could be achieved through the use of post-combustion controls involving Selective Catalytic Reduction (SCR), which represents the best level of control. The Division urges that NEDQ consider more efficient SCR controls at GGS which could significantly reduce NOx emissions[3] and may prove to be very cost effective. In Colorado there are only two large coal-fired electric generating units (EGUs) of similar generating capacity, Pawnee Unit 1 (505 MW) and Comanche Unit 3 (750 MW), both of which are required to operate SCR systems.

Rocky Mountain National Park is a treasure worth protecting for future generations. The visibility impacts attributed to GGS and the associated nitrogen deposition impacts warrant further consideration of top-tier post-combustion controls. These controls could result in significant NOx emission reductions that could help mitigate nitrogen deposition in the Park. We appreciate the opportunity to comment on NDEQ's proposed permit revisions on Gerald Gentleman Station, and request that NDEQ consider more efficient SCR NOx controls if they are determined to be cost effective and appropriate.

Sincerely,

William C. Allison V, Director
Air Pollution Control Division

cc: Martha E. Rudolph, CDPHE
Susan Johnson, NPS

[3] SCR control systems are capable of providing high levels of NOx reduction, ranging from 80% to >90%.

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Bill Ritter, Jr., Governor
Martha E. Rudolph, Executive Director

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Colorado Department
of Public Health
and Environment

January 21, 2011

Shelley Schneider
Administrator, Air Quality Division
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, NE 68509-8922

RE: Comments on NDEQ proposed State Implementation Plan for Regional Haze and Best Available Retrofit Technology

Dear Ms. Schneider,

The Air Pollution Control Division of the Colorado Department of Public Health and Environment (the Division) appreciates the opportunity to comment on Nebraska Department of Environmental Quality's (NDEQ's) Regional Haze plan and associated Best Available Retrofit Technology (BART) control determination for the Nebraska Public Power District (NPPD) - Gerald Gentlemen Station (GGS).

GGS is located about 375 kilometers (235 miles) from the world-renowned Class I Area - Rocky Mountain National Park (RMNP), a special place that personifies the rugged splendor of the Rocky Mountains. Although the distance between Park and GGS is substantial, the visibility impacts on the Park are indeed measurable at over 1 deciview (3-year average 2001-2003, pre-BART) based on CALPUFF modeling analysis provided on the NDEQ website.

A review of the GGS BART analysis in the proposed RH Plan indicates that NDEQ proposes NOx controls (low NOx burners and over-fire air) at a cost effectiveness of $200 per ton of NOx reduced and no SO2 control, other than the continued use of low-sulfur coal. The Division has reviewed the CALPUFF modeling (provided on the NDEQ website) for various emission control scenarios and notes that certain GGS SO2 and NOx controls provide an estimated 0.45 Δdv^1 and 0.41Δdv^2 visibility improvement at RMNP, respectively. Although regional CMAQ modeling and CALPUFF modeling are not directly comparable, it does indicate that measureable visibility improvements at Rocky Mountain National Park would result from SO2 and NOx controls at GGS. Colorado further acknowledges, based on review of the CALPUFF modeling, that another nearby Class I area, Great Sand Dunes National Park

[1] The 3-year average (2001-2003) visibility improvement from SO2 controls (Flue Gas Desulfurization)

[2] The 3-year average (2001-2003) visibility improvement from NOx controls (low NOx burners with overfire air and Selective Catalytic Reduction).

& Preserve would also benefit with respect to visibility improvement from SO2 and NOx emission reductions associated with FGD and SCR controls on GGS.

The GGS SO2 control analysis[3] indicates that there are substantial annual costs ($123,933,694) associated with securing water for flue gas desulfurization (FGD) but in light of the substantial SO2 reductions (~39,815 tpy) it appears that FGD control is cost effective at $3,113 per ton of SO2 reduced. The Division supports NDEQ's consideration that control for SO2 can be reasonable in light of these apparent costs, and when FGD is a common readily-available control technology for electric generating units (EGUs), and considering the EPA BART Rule (70 FR 39104) specifies that all coal-fired power plants over a 750 MW threshold to meet a presumptive SO2 emission standard of 0.15 pounds per million Btu.

The GGS NOx control analysis[4] similarly indicates substantial annual costs ($57,251,000) associated with low NOx burners with over-fire air and SCR (LNB w/OFA & SCR), but considering the significant NOx reductions (~24,926 tpy) it appears that LNB w/OFA & SCR is cost effective at $2,297 per ton of NOx reduced. In assessing appropriate NOx controls in Colorado, for NDEQ's consideration the Division notes that it also considered the 5-factors on subject-to-BART units in Colorado. For top-tier post combustion controls (SCR), Colorado established NOx control cost criteria (< $5,000 per ton) along with visibility improvement (≥ 0.5 Δdv) to inform the appropriateness of SCR controls. If such review criteria were used for GGS impacts at RMNP, it appears that SCR control costs are below such a NOx control cost criteria threshold, although the associated level of visibility improvement for RMNP is not sufficient (under 0.5 Δdv); however, visibility benefits would be different at different Class I Areas, *e.g.*, Badlands National Park.

Consequently, the Division requests that NDEQ consider these comments as it evaluates SO2 and NOx controls at GGS under the Regional Haze rule, in part to help Colorado make progress towards the visibility improvement goals at Rocky Mountain National Park. We appreciate the opportunity to provide these thoughts and considerations to NDEQ as it evaluates its proposed Regional Haze plan for SO2 & NOx controls on Gerald Gentleman Station.

Sincerely,

Paul Tourangeau, Director
Air Pollution Control Division

cc: Martha E. Rudolph, CDPHE
Callie Videtich, EPA Region 8
Becky Weber, EPA Region 7
Pat Brewer, NP

[3] Nebraska Dept. of Environmental Quality State Implementation Plan for Regional Haze and Best Available Retrofit Technology (BART); December 2010.

[4] BART & PSD Analysis for the Nebraska Public Power District Gerald Gentleman Station; May 11, 2010.

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Bill Ritter, Jr., Governor
James B. Martin, Executive Director

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Colorado Department
of Public Health
and Environment

June 23, 2009

Beverly Kellison
Nebraska Department of Environmental Quality
PO Box 98922
Lincoln, NE 68509-8922

RE: Comments on NDEQ proposed Best Available Retrofit Technology Determination for Nebraska Public Power District - Gerald Gentlemen Station – Units 1 and 2

Dear Ms. Kellison,

The Air Pollution Control Division of the Colorado Department of Public Health and Environment (the Division) appreciates the opportunity to comment on Nebraska Department of Environmental Quality's (NDEQ's) technical review of potential SO2 and NOx emission controls associated with Best Available Retrofit Technology (BART) on the Nebraska Public Power District (NPPD) - Gerald Gentlemen Station (GGS).

GGS is located about 375 kilometers (235 miles) from the world-renowned Class I Area - Rocky Mountain National Park, a special place that personifies the rugged splendor of the Rocky Mountains. Although the distance between Park and GGS is substantial, the visibility impacts on Park are indeed measurable at over 1 deciview (3-year average 2001-2003, pre-BART) based on CALPUFF modeling analysis provided on the NDEQ website.

Based on Clean Air Markets Division (CAMD) data for 2006, GGS is the largest electricity generating plant in Nebraska at 1,365 MW with the highest emissions for SO2 (31,135 tons/year) and NOx (17,647 tons/year) from any in the state. The SO2 emissions from GGS (units 1 and 2) alone equate to more than half of all the SO2 emitted from all coal-fired power plants in Colorado. Sulfur emissions are of particular concern since SO2 reacts to form particulate sulfate that increases in size with increasing humidity thereby contributing significantly to visibility impairment on some days.

A review of the GGS BART analysis indicates that NDEQ proposes NOx controls (low NOx burners and over-fire air) at a cost effectiveness of $200 per ton of NOx reduced, yet no control for SO2. This is particularly of concern in light of the visibility impacts at Rocky Mountain National Park that are identified in the NDEQ BART analysis. The EPA BART Rule (70 FR

39104) specifies that all coal-fired power plants over a 750 MW threshold meet a presumptive SO2 emission standard of 0.15 pounds per million BTU. The Division questions why NDEQ would propose no control for SO2 when the Flue Gas Desulfurization (FGD) is a readily-available, common control technology for electric generating units (EGUs).

The Division has reviewed the technical support for the BART proposal, and suggests that NDEQ, if it has not already done so, closely evaluate the basic parameters of expected costs for a dry FGD controls applied to a facility of this size, taking advantage of economies of scale. While an estimated $2,700 per ton of SO2 reduced is sensible, if the aggregate cost is confirmed to be lower after close dialogue with NDEQ engineers, the source, and perhaps EPA technical experts, then the SO2 control cost could be substantially lower. EPA may be a source of technical information as to the relative, and as-applied, costs for FGDs in the country with respect to the basic parameters of expected costs.

The most recent Western Regional Air Partnership (WRAP) Regional Haze modeling, using the Community Multiscale Air Quality (CMAQ) model, projects Rocky Mountain National Park worst-days visibility at 13 deciviews (dv) in 2018. Although the model projection is an improvement over the Park's 13.8 dv baseline, it is far short of the 2018 uniform progress goal of 12.3 dv. Visibility is being significantly impaired in Rocky Mountain National Park by air pollution, which the Regional Haze rule is intended to address. More information on the baseline, model projections and source apportionment for Rocky Mountain National Park can be found at the following website address:

http://vista.cira.colostate.edu/tss/Results/HazePlanning.aspx

The WRAP also conducted PM Source Apportionment Technology (PSAT) modeling that identifies the Central Region Air Planning Association (CENRAP) as the 4th highest contributor to sulfate (about 7.2%) in 2018 on the 20% worst days at Rocky Mountain National Park. The Division acknowledges that the CENRAP encompasses several states besides Nebraska, but GGS is among the largest sources of SO2 in CENRAP that is in relative close proximity to Rocky Mountain National Park, so it is reasonable to conclude that some portion of the CENRAP attribution is associated with GGS. Consequently, the Division requests that NDEQ review and reconsider SO2 controls at GGS under the Regional Haze rule to help Colorado make progress towards the visibility improvement goals at Rocky Mountain National Park.

The Division has reviewed the CALPUFF modeling (provided on the NDEQ website) for various emission control scenarios and discovered that GGS SO2 controls alone provide a net 0.46 dv (3-year average 2001-2003, FGD) visibility improvement at Rocky Mountain National Park. Although regional CMAQ modeling and CALPUFF modeling are not directly comparable, it does indicate that measureable visibility improvements at Rocky Mountain National Park would result from SO2 controls at GGS. Colorado further acknowledges, based on review of the CALPUFF modeling, that another nearby Class I area, Great Sand Dunes National Park & Preserve would also benefit with respect to visibility improvement from SO2 emission reductions associated with FGD controls on GGS.

One potential barrier to FGD controls for SO2 is the availability of water. Like Colorado, western Nebraska is an arid state where water availability and appropriation are significant issues

statewide. Notwithstanding, all large (>250 MW) Colorado EGUs have installed or are required to install dry or wet FGD controls to reduce SO2 emissions. Several Colorado EGUs under 250 MW have also installed FGD controls. The majority of Colorado EGUs have employed dry FGDs, commonly referenced "Lime Spray Dryer" (LSD), as the LSD system has lower water demands, better waste stream characteristics and similar control efficiencies to a wet FGD system. FGDs have been employed on EGUs throughout Colorado based on various regulatory programs, including for BART under Regional Haze.

We appreciate the opportunity to comment on NDEQ's analysis of Regional Haze SO2 controls on Gerald Gentleman Station, and request that NDEQ review and consider SO2 controls as appropriate that are consistent with the Regional Haze Rule.

Sincerely,

Paul Tourangeau, Director
Air Pollution Control Division

cc: Martha E. Rudolph, CDPHE
Callie Videtich, EPA Region 8
Becky Weber, EPA Region 7
Bruce Polkowsky, NPS

Responses to Colorado DPHE comments

1. ***CDPHE addressed the portion of the Executive Summary of Nebraska's draft report which states,***

   "States having Class I areas with the potential to be impacted by emissions from Nebraska sources have made no requests, to date, for emission reductions from sources within the state of Nebraska to meet reasonable progress goals for visibility at Class I areas within their borders."

   Commenters noted that the State of Colorado has repeatedly commented on emissions impacts from GGS and referenced three letters (from 2009, 2011, and 2014) that address these concerns, and asked that NDEQ acknowledge these requests. CDPHE states that additional reductions in SO_2 are needed to help Colorado meet future RPGs. They asked that NDEQ acknowledge these requests.

   Response 1
   This comment was also made by NPS and is addressed in Response 3 to Comments from National Park Service. Additional concerns from the earlier letters are addressed in Responses 4, 5, and 6 below.

2. ***CDPHE states that modeling indicates emissions from GGS are impacting visibility at RMNP and Great Sand Dunes National Park (GSDNP). CDPHE disagrees with the NDEQ assertion that GGS has no significant impact on RMNP, and acknowledge that although improvements in visibility have been achieved, these are due in no part to reductions in SO_2 emissions at GGS.***

   Response 2
   NDEQ acknowledges CDPHE concerns and disagreement with the assertion that visibility impacts on RMNP from GGS are not significant. The basis for this assertion is derived from meteorological data presented in the Nebraska Regional Haze SIP (2011) and reinforced by more recent meteorological data from the CAMD CASTNET monitor in RMNP (ROM406). Further, the limited reliability of CALPUFF modeling for distances over 300 km also supports this assertion.

   Background
   The 2011 Nebraska Regional Haze SIP explained that the visibility impact on RMNP is not clearly attributed to GGS based on the COHA regional modeling. This modeling analysis predicted that *CENRAP states* contribute 7.2% of sulfates in 2018 on the 20% worst days at RMNP (emphasis added). Although Nebraska is one of the nine CENRAP states, and GGS is among the largest sources of SO_2 in the region, the meteorological data illustrates that transport from this source is not significant.

Meteorological Data

In Nebraska's 2011 Regional Haze SIP, concerns by CDPHE were addressed and the meteorological data presented did not support long-range transport from GGS to RMNP. The data included an annual wind rose (generated in the COHA) based on wind speed and direction data from 1996-2001, which illustrated that the wind was predominantly from the northwest (2011 NDEQ Regional Haze SIP, figure A1). GGS is 382 km to the east and slightly north of RMNP. Frequency of wind from the East-Northeast, during the period 2010-2014, is less than 1%.

A summary of CASTNET meteorological data (2010-2014) collected at the ROM406 monitor, shown below, illustrates that the wind direction is primarily from the northwest.

ROM406 (2010-2014)[3]	
Wind direction (°)	**frequency of wind from this direction (%)**
North	6.95%
NNE	3.83%
NE	1.59%
ENE	0.96%
East	0.94%
ESE	1.84%
SE	6.97%
SSE	7.18%
South	3.23%
SSW	2.35%
SW	2.64%
WSW	5.80%
West	12.87%
WNW	16.90%
NW	15.67%
NNW	10.27%

[3] U.S. Environmental Protection Agency Clean Air Markets Division, Clean Air Status and Trends Network (CASTNET), Prepackaged Data (metdata_2010 thru metdata_2014), accessed on February 13-15, 2017.

Limited Reliability of CALPUFF Modeling at Distances Beyond 300 Kilometers

The reliability of the CALPUFF model at distances beyond 300 km is limited. As stated by CDPHE in the *CALMET/CALPUFF BART Protocol for Class I Federal Area Individual Source Attribution Visibility Impairment Modeling Analysis,* (Oct 24, 2005):

> "This protocol is intended to provide sufficient technical documentation to support the application of CALPUFF at distances up to 300 kilometers." (p. 9)

Likewise, results of this modeling analysis excluded one Class I area in Colorado because of its distance of over 300 km from BART-eligible sources:

> "Mesa Verde was excluded because it is more than 300 km from all of the BART-eligible sources in Colorado...The results for source-to-receptor distances beyond 300 kilometers may be used, but they may overestimate impacts because puff splitting has not been used." (p. 41)

If one applies this line of reasoning to the CALPUFF modeling analysis referenced by CDPHE for GGS, it is likely that the impacts from this source on RMNP and GSDNP are overestimated as well, as the distance between GGS and these Class I areas are 382 km (RMNP) and 529 km (GSDNP). Considering this, and accounting for meteorological data presented above, it is unlikely that emissions from GGS significantly impact RMNP.

Visibility Progress in Colorado

CDPHE states in the comment letter dated August 5, 2016, that Colorado is "meeting the regional haze RPGs for RMNP." According to Colorado's Regional Haze 5-year Progress Report, Appendix E (Table 2)[4], visibility conditions at RMNP for the period 2009-2013 (worst 20% days) have improved upon 2018 projected glide path values by a factor of 202%.

The progress report also states "For the Worst 20% Days, all 6 sites show significant visibility progress towards 2018 RPGs," and "5 of 6 IMPROVE monitors, representing 9 of 12 Class I areas, show better visibility than the 2018 Reasonable Progress Glide Slope Values."[5] Regarding the second statement, the IMPROVE monitor at RMNP (ROMO1) is one of those five monitors showing better-than-glide-slope visibility.

Colorado's progress report (Appendix E, section 4) offers an assessment of changes impeding visibility progress at Class I areas within their state. In this assessment, there is no mention of the reliance on CSAPR by Nebraska (as an alternative to SO_2 controls at GGS), or the lack of controls at GGS, as impeding visibility progress at Class I areas in Colorado. Moreover, the need for further reductions in emissions from this source was not mentioned in Colorado's Regional Haze Five-Year Progress Report.

NDEQ maintains its assertion that visibility impacts on RMNP from GGS are not significant.

[4] Colorado Regional Haze 5-year Progress Report, November 19, 2015, p 8

[5] Appendix E, Colorado Regional Haze 5-year Progress Report, November 19, 2015, p 10

3. CDPHE comments address the lack of SO_2 BART controls at GGS and state that it is unclear how EPA's reliance on CSAPR will address Colorado's concerns regarding visibility improvement.

Response 3

NDEQ acknowledges Colorado's concerns regarding visibility improvement at Class I areas within their state. The BART analysis conducted for GGS as part of the Nebraska 2011 Regional Haze SIP was disapproved by EPA, based on the cost-analysis performed, and a FIP was promulgated (77 FR 40149). This FIP relies on CSAPR, also known as the Transport Rule, as an alternative to SO_2 BART for GGS. The rule (77 FR 33642, June 7, 2010) determined that the CSAPR trading programs achieve greater reasonable progress towards the national goal of achieving natural visibility conditions in Class I areas than source-specific BART. The remand presently in place for CSAPR does not include budgets for Nebraska; thus, NDEQ is unable to comment on how EPA will resolve that matter, and cannot address CDPHE's concerns on EPA's reliance on CSAPR for GGS.

Nebraska presently participates in the CSAPR Trading Program for both SO_2 and NO_x, with annual budgets of 68,162 tons (SO_2) and 30,039 tons (NO_x). Annual allowances for GGS are 28,896 tpy. As shown in Tables 12 and 16 of this report, annual SO_2 emissions are below the allowance. Moreover, the state is in compliance with 40 CFR, Subpart P, section 51.308(e)(4):

> A State whose sources are subject to a trading program established under part 97 of this chapter in accordance with a federal implementation plan set forth in §52.38 or §52.39 of this chapter or a trading program established under a SIP revision approved by the Administrator as meeting the requirements of §52.38 or §52.39 of this chapter need not require BART-eligible fossil fuel-fired steam electric plants in the State to install, operate, and maintain BART for the pollutant covered by such trading program in the State. A State may adopt provisions, consistent with the requirements applicable to the State's sources for such trading program, for a geographic enhancement to the trading program to address any requirement under §51.302(b) or (c) related to reasonably attributable impairment from the pollutant covered by such trading program in that State.

While there are no control measures in place, there are PSD permit limits for SO_2 of 1.2 lb/MMBtu. GGS complies with this emission limit through the use of low-sulfur coal.

4. CDPHE commented on the proposed permit revision (BART-NO_x emission controls for GGS, unit 2) requesting that NDEQ consider selective catalytic reduction (SCR) NO_x controls rather than low-NO_x burners and over-fire air. (April 25, 2014)

Response 4

Comments provided by CDPHE were taken into consideration regarding the proposed permit revision. The controls chosen were based on cost and feasibility as outlined and evaluated in the 2011 NDEQ RH SIP (Appendix 10.6, Revised BART Analysis for GGS Units 1 & 2). The appendix notes that the use of SCR (in addition to Low-NO_x burners with over-fire air) will consume power and reduce overall unit efficiency. Also, SCR would result in an incremental cost effectiveness of $5,445/ton versus a cost of $198/ton for the use of Low-NO_x burners with over-fire air alone (2011 Nebraska RH SIP, Table 7).

At GGS, NO_x emission reductions of 38.5% were achieved by the use of Low-NO_x burners with over-fire air over the period 2010-2014. (these reductions were noted in Section I.G., p. 10, and were calculated using values from Table 5 in the progress report).

Nebraska received a designation of "Unclassifiable/Attainment" for the NO_x NAAQS (77 FR 9532, February 17, 2012).

5. CDPHE commented on the proposed NDEQ Regional Haze SIP and BART, requesting consideration of more stringent controls for NO_x and SO_2 at GGS. (January 21, 2011)

Response 5

Comments provided by CDPHE were taken into consideration when evaluating SO_2 and NO_x controls for GGS regarding the proposed SIP. The BART analysis conducted did not support the controls proposed by CDPHE. Although the BART analysis for GGS was disapproved by EPA, the facility has demonstrated a decrease in SO_2 emissions as described in Section II of this progress report. Further, GGS emissions are below the allotted budget under the CSAPR SO_2 Group 2 Trading Budget, as outlined in Response 3 above. .

NO_x controls and emissions reductions are discussed in Response 4.

Emissions of SO_2 from GGS decreased by 17.7% over the period 2010-2014 (as discussed in Response 1 to NPS Comments). The area around GGS was designated as "Unclassifiable/Attainment" for the 2010 1-hour SO_2 Data Requirements Rule (81 FR 45039, July 12, 2016). Further discussion regarding additional controls at GGS is noted in Response 1 to Comments from National Park Service.

6. CDPHE commented on the proposed BART determination for GGS, requesting that NDEQ review and consider SO_2 controls at GGS to assist Colorado in making progress toward visibility improvement goals at RMNP. (June 23, 2009)

Response 6

Comments provided by CDPHE were taken into consideration when evaluating SO_2 controls at GGS. This is further addressed in Response 5, and in Response 1 to Comments from National Park Service.

Comments From NPCA/Sierra Club

August 11, 2016

Via email to NDEQ.AirQuality@nebraska.gov

Nebraska Department of Environmental Quality
Air Quality Division
ATTN: Tracy Wharton
P.O. Box 98922
Lincoln, NE 68509-8922

Re: Draft Regional Haze Five-Year Progress Report for Nebraska

Dear Ms. Wharton,

On behalf of the National Parks Conservation Association ("NPCA") and Sierra Club, we respectfully submit comments on the Draft Regional Haze State Implementation Plan Five-Year Progress Report for Nebraska ("Draft Progress Report"). NPCA is the oldest and largest membership organization dedicated to the protection of the National Park System, with over 1.1 million members and supporters nationwide, including approximately 5,540 in Nebraska. Sierra Club is the nation's largest and most influential grassroots environmental organization, with over 2.4 million members and supporters nationwide and approximately 8,940 members and supporters in Nebraska. NPCA and Sierra Club have long advocated for regional haze improvements related to our nation's national parks, forests, and wilderness areas. We appreciate the opportunity to comment on the Draft Progress Report.

I. Purpose and Process of Five-Year Progress Reports

Pursuant to federal regulations, a state must submit progress reports to the Environmental Protection Agency ("EPA") every five years that detail the state's headway toward achieving its goals for visibility improvement at Class I areas. Specifically, the reports must include the following:

(1) A description of the status of implementation of all measures included in the implementation plan for achieving reasonable progress goals for mandatory Class I Federal areas both within and outside the State.
(2) A summary of the emissions reductions achieved throughout the State through implementation of the measures described in paragraph (g)(1) of this section.

(3) For each mandatory Class I Federal area within the State, the State must assess the following visibility conditions and changes, with values for most impaired and least impaired days expressed in terms of 5-year averages of these annual values.

i. The current visibility conditions for the most impaired and least impaired days;
ii. The difference between current visibility conditions for the most impaired and least impaired days and baseline visibility conditions;
iii. The change in visibility impairment for the most impaired and least impaired days over the past 5 years;

(4) An analysis tracking the change over the past 5 years in emissions of pollutants contributing to visibility impairment from all sources and activities within the State. Emissions changes should be identified by type of source or activity. The analysis must be based on the most recent updated emissions inventory, with estimates projected forward as necessary and appropriate, to account for emissions changes during the applicable 5-year period.
(5) An assessment of any significant changes in anthropogenic emissions within or outside the State that have occurred over the past 5 years that have limited or impeded progress in reducing pollutant emissions and improving visibility.
(6) An assessment of whether the current implementation plan elements and strategies are sufficient to enable the State, or other States with mandatory Federal Class I areas affected by emissions from the State, to meet all established reasonable progress goals.
(7) A review of the State's visibility monitoring strategy and any modifications to the strategy as necessary.

40 C.F.R. § 51.308(g)(1)-(7). Concurrent with the aforementioned requirements, states must also opine on the adequacy of their existing state implementation plan ("SIP") pursuant to 40 C.F.R. § 51.308(h). Thus, the Draft Progress Report is designed to evaluate the state's progress towards its SIP goals for Class I areas, all located outside Nebraska, that are affected by emissions originating within Nebraska. Nebraska concludes that its 2011 SIP is adequate to achieve visibility improvement and emissions reductions goals. Draft Progress Report at 28. We respectfully disagree.

II. EPA Should Not Approve the Draft Progress Report Until It Meets EPA's Requirements.

In April 2013, to clarify its regulatory requirements regarding progress reports, EPA issued a guidance document entitled *General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans (Intended to Assist States and EPA Regional Offices in Development and Review of the Progress Reports)* ("April 2013 Guidance"). Helpfully, EPA provided a checklist for evaluators to ensure compliance with regulatory requirements. April 2013 Guidance at 24-25. We walk through several of these elements below, noting where Nebraska falls short of its obligations.

A. The Draft Progress Report Does Not Comply with 40 C.F.R. § 51.308(g)(1).

EPA Checklist: "Status of Control Strategies in the Regional Haze SIP: Does the report include a list of measures the state relied upon?"

Several statements in this section and throughout the report lack adequate support. For instance, the report states that "[c]urrently, one source in Nebraska (GGS) is subject to CSAPR, and SO_2 emissions from this source to date have been below the allotted budget under the Group 2 Trading Program." Draft Progress Report at 6. This statement includes no citations for this proposition, making it difficult to verify the veracity of the claim. Table 1 of the report attempts to buttress a portion of the prior quoted claim, yet footnote 2 appears to be missing. Accordingly, Nebraska should revise the Draft Progress Report to include adequate citations and explanations for its various contentions.

Table 1 also demonstrates the notable absence of any SO_2 emission limits associated with Gerald Gentleman Station ("GGS") Units 1 and 2, as well as Nebraska City Station Unit 1. Nebraska should incorporate into the Draft Progress Report the emissions limits for SO_2, reflecting the use of low-sulfur coal and compliance via continuous emissions monitoring systems, for each of these units.

B. The Draft Progress Report Does Not Comply with 40 C.F.R. § 51.308(g)(2).

EPA Checklist: "Emissions Reductions from Regional Haze SIP Strategies: Does the report include estimated reduction estimates for these measures?"

Section II of the Draft Progress Report suffers from a lack of specificity. Tables 2 through 5 indicate that, overall, there is a downward trend in emissions, and we appreciate that Nebraska included data from a variety of sources. Yet, the report does not include a discussion about why,

specifically, emissions have fallen, nor whether the emissions reductions align with 2018 emissions inventory projections. Because the purpose of the Draft Progress Report is to assess the adequacy of the SIP, and because 40 C.F.R. § 51.308(g)(1) and (2) together require information about emission reductions specifically achieved "through the implementation of the measures" "included in the implementation plan," Nebraska must amend this section with a discussion of which emissions reductions are a consequence of enforceable SIP measures, and which reductions result from other factors (e.g., voluntary measures, temporary capacity reductions, etc.). Specifically, the state must include emissions reductions that have occurred in Nebraska as the result of the implementation of the Cross State Air Pollution Rule. Nebraska should also include emissions inventories used in creating the 2018 reasonable progress goals for comparison.

To illustrate, it appears that the NOx reductions from GGS Unit 2 are, in part, the result of emission rates that are well below the permitted rate of 0.23 lbs/MMBtu.[1] This emission rate is not enforceable, and until it becomes enforceable, Nebraska cannot rely upon any resulting emissions reductions to demonstrate reasonable progress. Further, Table 4 illustrates the importance of enforceable SO_2 emissions. Here, four of the seven units show *increases* in SO_2 over the timeframe described by Nebraska (2010 – 2014). The reason for SO_2 increases from these four units, as well as decreases from the remaining three units, is unclear. Nebraska should amend the Draft Progress Report to include a discussion of the enforceability of these SO_2 decreases, as well as what the state is doing to ensure that no further increases occur. It would also be helpful for Nebraska to include information about changes in emissions since the baseline period of 2000-2004. When examined over the entire first planning period to date, emissions of SO_2 from the sources in Table 4 have changed very little (and in fact have increased relative to 2000). We note that Tables 14 and 15 likewise indicate increases in PM_{10} and $PM_{2.5}$ emissions from these facilities, which Nebraska should explain.

Likewise, Section I includes references to existing and forthcoming source retirement and replacement schedules that, ostensibly, the state will rely upon for emissions reductions. *See* Draft Progress Report at 11-12. If this is the case, Section II must describe whether such retirement and replacements are enforceable via the SIP. If the emissions reductions are unenforceable, the state cannot rely on them for reductions achieved through the SIP. Coupled with this expectation, Nebraska should clearly indicate when it intends to incorporate EPA's Regional Haze Federal Implementation Plan ("FIP") into individual Title V permits for affected electric generating units ("EGUs").

[1] Data from EPA's Air Markets Program Database indicate maximum monthly average NOx emission rates at or below 0.18 lbs/MMBtu since 2013.

Additionally, Nebraska proffered the Draft Progress Report for public comment on July 11, 2016,[2] well after verified 2015 emissions data was available. Nebraska should update the Draft Progress Report to incorporate quantitative and corresponding narrative discussions with 2015 emissions data. For instance, Pg. 15 of the Draft Progress Report includes a brief recitation of controls at NCS and GGS, thereby alluding that the emissions reductions were due to unit retrofits. As discussed above, this recitation by itself is not dispositive. Moreover, had the state included 2015 emissions data, it would be clear that SO_2 emissions *increased* from 2014 to 2015, necessitating a discussion about whether further enforceable SO_2 emissions reductions are necessary.

Finally, Section II should be amended to include PM, VOCs, and ammonia data.

C. The Draft Progress Report Does Not Comply with 40 C.F.R. § 51.308(g)(4).

EPA Checklist: "Emissions Progress: Does the report provide emissions trends across the entire inventory for a 5-year period as required by the Regional Haze Rule?"

We commend the state for presenting a readable accounting of emissions progress from multiple source categories in Section IV of the Draft Progress Report. As mentioned above, prior to EPA approval, Nebraska should likewise incorporate 2015 emissions data in Section IV. Helpfully, Tables 6 through 10 present 2002 baseline emissions data, which allows the reviewer a fuller picture of the emissions progress to date. Nebraska should update Tables 12 through 17 to include EGU emissions data since the baseline of 2000 – 2004 as well.

D. The Draft Progress Report Does Not Comply with 40 C.F.R. § 51.308(g)(5).

EPA Checklist: "Assessment of Changes Impeding Progress: Does the report include an explicit statement of whether there are anthropogenic emissions changes impeding progress?"

In Section V of the Draft Progress Report, Nebraska concludes that there are no anthropogenic emissions changes *within* the state impeding progress in reducing pollutant emissions and improving visibility. Draft Progress Report at 20 (emphasis added). This, however, does not end the analysis, as the state is required "to assess significant changes in anthropogenic emissions within or outside the State." 40 C.F.R. § 51.308(g)(5). Accordingly, the Final Report should incorporate a discussion of any changes in anthropogenic emissions outside Nebraska that may impede progress in the relevant Class I areas.

[2] Draft Regional Haze Five-Year Progress Report Available Online for Public Comment Hearing Scheduled August 11 in Lincoln, *available at* http://deq.ne.gov/Press.nsf/pages/NEWS071116.

E. The Draft Progress Report Does Not Comply with 40 C.F.R. § 51.308(g)(6).

EPA Checklist: "Assessment of Current Strategy: Does the report include an assessment of whether the state's haze plan is on track to meet reasonable progress goals?"

Section VI of the Draft Progress Report presents an incomplete and misleading picture of emissions from GGS on Colorado's Rocky Mountain National Park. Specifically, Nebraska states that Colorado did not "request additional emissions reductions from sources in Nebraska to support reasonable progress for their Class I areas." This is a peculiar reading of Colorado's letters submitted to Nebraska in 2009, 2011, and 2014, which all encourage emissions reductions from GGS, specifically. Section VI must be updated to incorporate a more complete and reasoned analysis.

Further, EPA guidance notes that the Draft Progress Report "should document the required consultation with Federal Land Managers." April 2013 Guidance at 21. Accordingly, Nebraska should document and assess the letters it has received directly or indirectly from the National Park Service, which similarly solicit additional emissions reductions from GGS.

F. The Draft Progress Report Does Not Comply with 40 C.F.R. § 51.308(h).

EPA Checklist: "Determination of Adequacy: Does the report ... provide the explicit determination required by the Regional Haze Rule?"

Nebraska concludes its Draft Progress Report by stating that its Regional Haze SIP is adequate and no revisions are necessary at this time. Draft Progress Report at 28. We respectfully disagree and request that Nebraska fix the aforementioned flaws. Moreover, although Nebraska briefly recounts the recently concluded 8th Circuit litigation surrounding EPA's FIP, the state neglects to discuss EPA's pending voluntary remand regarding reasonable further progress requirements at GGS.

Here, two different legal provisions compel EPA to require controls at GGS in order to make reasonable progress at affected Class I areas. First, where Nebraska sources impact the region's Class I areas and controls pass the four-factor reasonable progress analysis required by 40 C.F.R. § 51.308(d)(1)(i)(A), EPA should require such controls as part of Nebraska's long-term strategy. In recent federal implementation plans such as in Texas, EPA required controls for the sources that are large contributors to impairment and for which controls would be cost-effective and advance reasonable progress towards natural conditions. EPA must apply this same framework to Nebraska. EPA's prior analysis shows that GGS impairs Class I area visibility and

that post-combustion controls are feasible, meet the four reasonable progress factors, and would help achieve reasonable progress.

Second, EPA must require controls at GGS in order to comply with the requirement to include an approvable long-term strategy for Class I areas that are affected by emissions from the state. 40 C.F.R. § 51.308(d)(3). Under EPA's approach in Texas and elsewhere, the requirement to make reasonable progress is primary and must be met regardless of the status of any reasonable progress goals, which are designed to reflect required controls. In this instance, post-combustion controls are reasonable and should be required. This is particularly true given that (a) existing reasonable progress goals for Badlands, Wind Cave, and Rocky Mountain National Parks already reflect the reasonable, but unfulfilled, assumption of a scrubber at GGS; and (b) Nebraska lags far behind neighboring states taking measures to achieve reasonable progress, and especially in reducing EGU emissions.

Because the state's reasonable progress determination for GGS is still pending, and therefore the related goals for emission reductions have not yet been established, Nebraska cannot conclude that its plan "requires no further substantive revision at this time in order to achieve established goals for visibility improvement and emissions reductions." 40 C.F.R. § 51.308(h)(1). Nebraska should instead conclude that its SIP is "inadequate to ensure reasonable progress due to emissions from sources within the State," and should commit to revising its plan within one year as required by 40 C.F.R. § 51.308(h)(4).

Respectfully submitted,



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Responses to NPCA/Sierra Club comments

1. ***NPCA/Sierra Club indicates that statements in Section I of the report lack adequate support.***

    a. ***Citations missing to support the statement that GGS emissions have been below the allotted CSAPR budget for SO_2.***
    b. ***Footnote 2 for Table 1 is missing.***
    c. ***Emission limits for SO_2 at GGS and NCS are absent in Table 1.***

Response 1a
Footnotes 3 and 4 have been added beneath Table 1, which list SO_2 CSAPR allocations and SO_2 emissions for GGS, respectively.

Response 1b
Footnote 2 has been added beneath Table 1.

Response 1c
Emissions limits have been added to Table 1.

2. ***NPCA/Sierra Club comments that the following items were missing from Section II and that statements in this section lack adequate support.***

    a. ***Discussion regarding causes for the emissions reductions and whether they align with 2018 projections.***
    b. ***Enforceability of source retirement and replacement schedules.***
    c. ***Discussion of PM emissions increases at EGUs.***
    d. ***Indication of when the Regional Haze FIP will be incorporated into Title V permits for affected EGUs.***
    e. ***Emissions inventory data for 2015.***
    f. ***Emissions data for PM, VOCs, and ammonia.***

Response 2a
Additional discussion regarding causes for emissions reductions and their alignment with 2018 projections has been included in Sections II and IV of the report.

Response 2b
Additional information regarding this topic has been included in Section I.I.

Response 2c
Discussion of PM emissions increases for specific EGUs are included in Section IV.

Response 2d
The FIP issued in 2012 was remanded by EPA and a revised FIP has yet to be issued. If and when a FIP is issued, a determination will be made regarding the appropriate course of action.

Response 2e
The 2015 state emissions inventory was under review at the time the draft report was posted for public comment, therefore was not included. Both Sections II and IV have been updated to include 2015 and 2016 CAMD emissions data.

Response 2f
Emissions data for PM, VOCs, and ammonia are included in Section IV of the report. These pollutants were determined to not significantly contribute to visibility impairment at Class I areas impacted by Nebraska sources.

3. NPCA/Sierra Club comments that 2015 emissions data was missing from Section IV.

Response 3
This comment is addressed in Response 2e above.

4. NPCA/Sierra Club comments that emissions data from 2000-2004 should be added to Tables 12-17 in Section IV.

Response 4
This section of the report addresses progress over the period 2010-2014. Emissions data from 2000-2004 are not essential to the discussion in this section with regard to progress at EGUs, thus has not been included.

5. NPCA/Sierra Club comments that Section V of the report should include a discussion of anthropogenic emissions outside of Nebraska that impede progress at Class I areas.

Response 5
In the *EPA General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans* document, this assessment focuses on whether significant emissions changes within the state over the 5-year period have occurred, and whether emissions increases outside the state are affecting a Class I area within the state adversely. While this provision applies to all states, Nebraska does not have any Class I areas within the state for which visibility progress can be assessed with regard to emissions from other states. The changes in emissions from sources within Nebraska that impact Class I areas outside the state are the primary focus in this section.

6. NPCA/Sierra Club comments that Section VI represents an incomplete and misleading picture of the impact of emissions from GGS on RMNP in

Colorado, and suggests the report be updated to include a more complete and reasoned analysis.

Response 6

This comment is addressed in:

- Response 3 to Comments from National Park Service, and
- Responses 2, 4, 5, and 6 to Comments from Colorado DPHE.

7. NPCA/Sierra Club comments that documentation of consultation with Federal Land Managers is missing from the report.

Response 7

This consultation was in progress at the time the draft report was posted for public comment. Documentation has been included in Appendix A.

8. NPCA/Sierra Club disagrees that the Nebraska Regional Haze SIP is adequate and that no revisions are necessary at this time.

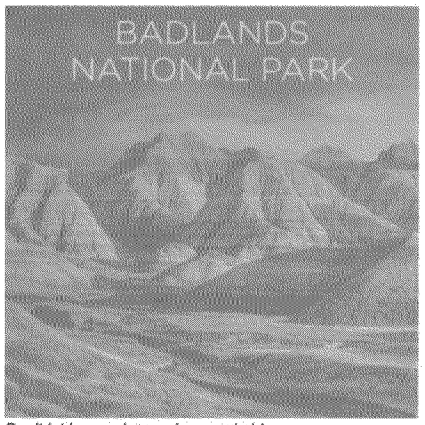
Response 8

The information and data currently available demonstrate emissions reductions from Nebraska sources, and notable progress in visibility conditions at Class I areas impacted by these sources. Based on the analysis presented in this report, NDEQ has determined that the current SIP is adequate. The FIP issued in 2012 was remanded by EPA and a revised FIP, specifically addressing the disapproved portion of the SIP, has yet to be issued; therefore, no revisions are proposed at this time. If and when a FIP is issued, the SIP will be reviewed to determine if revision is warranted.

Comments From Sierra Club (petition)

EXPLORE, ENJOY AND PROTECT THE PLANET (http://www.sierraclub.org)

Keep Nebraskan pollution out of our national parks!



Don't let haze ruin our views and air!

The Environmental Protection Agency needs to take action to protect the Badlands and Rocky Mountain National Park from Nebraska's pollution and revoke Gerald Gentleman's free pass to pollute.

Gerald Gentleman, a Nebraska Public Power coal plant, spews pollution into the air that travels across state borders and damages our national parks including the Badlands and the Rocky Mountains. The sulfur dioxide released from the plant causes view-damaging haze.

Haze pollution limits views affecting not just how far we can see, but also the color, sharpness, and quality of the view. It also makes the
air unhealthy for people, wildlife and natural resources. Pollution doesn't respect state boundaries and what happens in Nebraska can have a dire effect on parks across the region including South Dakota and Colorado's parks. It's critical that people like you stand up for these protections.

Reducing haze also means reducing pollution elsewhere. As we clean up the air in national parks, it means fewer asthma attacks, heart attacks, and other harmful effects of the pollution that causes haze.

Send your message to the EPA today -- keep Gerald Gentleman coal plant pollution out of our national parks!

I am writing to express my strong concern about air pollution from Nebraska Public Power District's Gerald Gentleman Station coal plant. It has come to my attention that sulfur dioxide is traveling hundreds of miles and negatively impacts visibility at six national parks and wilderness areas in South Dakota, Colorado, Missouri and Oklahoma, and this pollution negatively impacts public health right here in Nebraska.

Installing scrubbers at the Gerald Gentleman power plant would reduce SO2 pollution dramatically – 90% or more. This would save lives and dramatically reduce the number of Nebraskans suffering health impacts from this pollution.

Add a Personal Message

Protect our parks!

first_name	last_name	zip	comment
Carolyn	Freeman	68510	Yes, let's get those scrubbers up and going. We don't need haze to mess up our beautiful blue skies.
Joe	Mettenbrink	68102	Why & where is this nightmare plant?!
Terri	Hatch	68502	When we traveled in Big Bend, I was horrified by all the pollution haze -- don't let this happen here!!!
Arda	Pounds	68504	What's the matter with Nebraska? Please require scrubbers to protect our beautiful and precious environment!
Lisa	Swanson	68123	We see similar haze from MidAmerica Energy coal station in Iowa.
Coreen	Miller	68152	We need to do more for our environment.
			We need more enforcement of the We need enforcement of EPA regulations. They should apply to any plant affecting the environment or health of citizens.
Mary	Hyslop	68154	
Carla	Echandi	68134	Time to clean up your act!
Edmund	Pusch	68134	This should have been done decades ago .
Eric	Johnson	80304	This facility should not get to dump its waste on others for free.
Eric	Hasselbalch	68506	##
Sarah	Penn	62481	These sulphur dioxide scrubbers should definitely be required on all coal plants! Concern for business profits or costs should never be given priority over air and water quality necessary for the health of people!
Juliet	Andersen	68507	Sad
Catherine	Lohmeier	68502	Quality of life is more important that money. Install the scrubbers, no matter the cost, to improve the lives of Nebraskans.
Rosemary	Thornton	68510	Putting in "scrubbers" to reduce "regional haze" should not be put off until later; it should be required to be done immediately!
John	Lyne	68372	Pollution from coal fired plants must be stopped!
Rod	Jensen	68137	Please stop!
Susan	magor	68404	Please stop the pollution causing the haze that is affecting our health and our parks.
Susan	magor	68404	Please stop the pollution causing the haze that is affecting our health and our parks.
Lois	Frogge	68506	Please protect our National Parks and Wilderness Areas as well as the health of our population. Please keep our air clean and install the SO2 scrubbers.
K	Wahlmeier	68467	Much thanks.
Scott	Williams	68102	Our National Parks are a national treasure. Please help keep them that way, and protect them from pollution!
Peggy	Brown	98042	Oh, Gerald . . . how very shameful!
Larry	Bamesberger	68144	Nebraska value=You make a mess, you clean it up. National parks & wilderness areas are some of the finest areas in the USA.
Tom & Cathie	Genung	68901	Keep polution out!
Eric	Hansen	68508	More proof it's time for cleaner energy.
Esmeralda	Ramos	68107	Let's not become China.
Marj	Manglitz	68505	Let's demand "scrubbers" Now!
Bryan	Mack	68506	Let's clean up our act!
John	Kunzman	68620	Let's be good Stewart's of our Mother Earth!!
Tom & Cathie	Genung	68901	Keep pollution out of the air. We challange the EPA to take action!
Marie	Rourke	68134	It's past time to get serious about curbing pollution!
Rob	Schupbach	68502	it is time for nebraska's reed neck cheapskates to get in the real world
Dick and Kathlee	Wiechman	68505	If the technology is there, then use it to protect the environment...we only have one "environment".

			I worked in Yellowstone Nat'l Park for 3 summers while I was in college, so the Parks are important to me. The Board of NPPD should have been thinking ahead, instead of trying to get away with hanging on to energy
Elaine	Wells	68152	sources of the past.
Don	Botic	68025	
Steve	Stump	68803	Hope this helps
			For our children and our children's children. Let's grow up, America, and be
Trent	Bailey	68104	responsible stewards of this great land.
			Efforts need to be made to stop polluting our air. The coal plants need to
Michael	Davis	68636	either shut down or install "scrubbers" in order reduce the pollution.
Charlie	Hawk	68503	Do whatever it takes to take care of this.
Dan	Janssen	68507	Do it!
LI	Price	68845	##
June	Simpson	68506	Clean air..life giving.
MaryRuth	Stegman	68106	Clean our air!
			Build more renewable energy systems. Please. I would like my grandchildren
David	Sweeney	68104	to have clean air to breathe. Do something right.
			Both air quality and water quality are indispensable to the health of every living thing. It is a responsible action to require the lowering of SO2 pollution
Celia	Parrott	69351	particularly when a remedy exists and simply needs to be implemented!
			Be a good, respectable U.S. plant and do the right thing by installing scrubbers to reduce the amount of SO2 pollution you are emitting. Sandra
Andy and Sandra	Fairley	68338	Fairley, Daykin, NE
			As a meteorologist, I am amazed that such a plant can still be allowed to
John	Pollack and Ben	68131	operate without scrubbers.
			Apparently, none of you or your children will require air to breathe or water to drink. 99% of us aren't so special and ask you to think about us, and stop
Patsy	Burnett	68822	killing the environment we require for life. Thank you.
			Another reason to stop fossil fuel use. The pollution from extracting, processing, transporting is dangerous to the health of the workers, air quality
Ginny	Wright	68516	for all & the environment. We must not continue as is.
Scott	Erickson	68114	
Glenda	Moore	68506	
Renee	Atkinson	68144	
Andrea	Howard	68106	
Emily	Smith	68504	
Sarah	Merrigan	68130	
Judith	Murphy	68763	
Stacey	Litz	68031	
Carol	Durham	68104	
Ryan	Wishart	68132	
Dorothy	Droz	68137	
Wanda	Koory	68124	
Edward	Abel	68048	
Judith	Murphy	68763	
Kathryn	Dominguez	68502	
Nancy	Badura	69337	
Ann	Eppler	68516	
Robin	Waters	68467	
Angie	Olberding	68780	
Val	Hyde	69101	
Rebecca	Birkel	69123	
Jared	Jensen	68137	
Lois	Schreur	68104	
Sherry	Grout	68005	
Tim	Golden	68516	
Susan	Radosti	68729	
Mary	Martin	68127	
Lilly	Blase	68502	

Responses to Sierra Club petition comments

Comments provided by signers of the petition, in general, called for the installation of scrubbers at GGS. Concerns about the health of citizens were also expressed.

Response

GGS has demonstrated a 20.7% reduction in SO_2 emissions over the period 2010-2016, as shown in Section II, Table 4. When comparing 2016 SO_2 emissions to the baseline year emissions (2002) for GGS, as provided in the initial Regional Haze SIP for Nebraska (2011; Table 8.4), GGS has demonstrated reductions of 29.2%.

This EGU is subject to the health-based standards for SO_2 (1-hour SO_2 NAAQS). In September 2015, air dispersion modeling - which utilized actual emissions data - was conducted for this source and the area demonstrated attainment with the 2010 1-hour SO_2 NAAQS. On July 12, 2016, the area around GGS was designated by EPA as "Unclassifiable/Attainment" (81 FR 45039).

In consideration of the above-noted compliance and designation, as well as improvements in visibility at Class I areas impacted by sources in Nebraska, no additional controls for GGS are planned at this time.

In preparation for the next planning period, NDEQ will continue to evaluate SO_2 emissions sources and their impact on Class I areas.

Comments From Nebraska Wildlife Federation and Nebraska Farmer's Union (NWF-NFU)

September 7, 2016

Jim Macy, Director
Nebraska Department of Environmental Quality
1200 N Street, Suite 400
Lincoln, NE

Dear Director Macy,

Having read the draft of the *Nebraska Department of Environmental Quality Regional Haze State Implementation Plan Five-Year Progress Report*, we must raise objections to some of the conclusions in the report, and to the report's ultimate conclusion that the current plan "continues to be adequate to achieve visibility improvement and emissions reductions goals set forth by the Regional Haze Rule," and to NDEQ's conclusion that no revisions to the current 2011 State Implementation Plan are needed at this time.

Instead, we believe that the data in the report shows that the state has made at best no significant progress in reducing SO2 pollution, and the information presented does not show whether or not progress is being made in reducing particulate emissions. While reductions in NOx pollution since 2010 are significant and noteworthy, we believe the lack of progress in other areas indicates a need for the State of Nebraska to re-write its Regional Haze State Implementation Plan over the next year to ensure continued progress in reducing SO2 and particulate pollution.

We note that the purpose of the Regional Haze rule is to promote the visibility of federal lands like Badlands, Wind Cave, and Rocky Mountain National Parks. However, the reductions in sulfur dioxide, nitrous oxides, and particulate pollution that should result from strengthening Nebraska's State Implementation Plan would also greatly benefit the health of Nebraskans who live near the electric power plants that are the source of most of the pollution. Heart disease, asthma and other health conditions linked to these pollutants cost hundreds of millions of dollars in health impacts and lost work in Nebraska.

I. Lack of Progress in Reducing SO2 Pollution

From information in Table 8, point sources of pollution make up over 95% of Nebraska's SO2 emissions. On page 17 of the draft report, the narrative says "the point source data for the state shows a steady decrease in emissions over the last five years," but that is *not* an accurate description of the SO2 data for point sources shown in Table 8. In fact, point source SO2 pollution rose substantially from 2010 to 2011, fell in 2012, rose again in 2013, and fell again in 2014. The average of the annual SO2 point source emissions in Table 8 over the four years from 2011-2014 is 68,846 tons, which is 1.2% *above* the 2010 baseline. The data does not reflect a 'steady decrease' in emissions from 2010, and in fact represent at best flat performance.

The draft report notes (Table 12 and 13) with respect to electric generation units (EGU's) that "EGU's emit the majority of the visibility impairing point source emissions in the state. Specifically, for the most recent complete set of emissions data (2014), the top seven (by emissions) power plants in the state have

emitted 94.8% of the total SO2, and 66.3% of the total NOx, reported from all point sources combined" (draft report, page 18). Given that, it is good to see that overall, SO2 and NOx emissions have declined at Gerald Gentleman Station, the largest polluter, although it is very troubling that some power plants show substantial increases in emissions of one or both pollutants (including Whelan, Lon Wright, Nebraska City, and North Omaha power plants). And, similar to the overall point source data noted above, it is very troubling that the average annual SO2 emissions for 2011 through 2014 (see Table 12) are actually 65,545 tons, which is 1.2% *above* the 2010 baseline. This contrasts with the NOx emissions in Table 13, which show a clear trend of declining emissions. This same problem in describing the data applies to Table 15 (emissions reported to CAMD); emissions for two of the years reported (2011 and 2013) are above 2010, two of the years (2012 and 2014) are below 2010, and the four-year average (2011-2014) is actually above the 2010 baseline.

In short, the data presented in the draft report don't show progress, they show a *lack of progress* in reducing SO2 emissions from power plants, point sources as a group, and all Nebraska sources in general. This lack of progress highlights the need for Nebraska to review and revise its State Implementation Plan, to get back on track in sustained reductions in SO2 pollution.

II. Uncertainty in Particulate Emissions Trend

On page 17, the narrative explains away the substantial increase in PM2.5 emissions from point sources based on having more complete data, but it is not clear to us that this is actually the case. The report does not provide data that, for instance, isolates the point sources where comparable data is available for the years in question. Table 9, PM10 emissions, shows an increase in point source pollution and on-road vehicle pollution, and a decrease in pollution from off-road vehicles.

It is not clear, based on the information presented in the draft report, that particulate emissions have actually been reduced since 2010. The Department of Environmental Quality needs to either provide a fuller explanation and data to support its conclusions, or move ahead with a revised State Implementation Plan that will result in continuing progress in reducing particulate emissions.

III. Uncertainty in Future Progress

The draft report (page 12-13) says upcoming changes driven by the federal Mercury and Air Toxics (MATS) rule will result in further reductions in SO2, acid gases and mercury. The draft report also notes that extensions were requested for 5 of Nebraska's 9 large electric generating units subject to MATS, and those were granted through April, 2016. Nebraska Public Power district reported that both Gerald Gentleman Station and Sheldon Station met the federal MATS rule as of 2015. It is not clear to us whether the activated carbon injection system installed by NPPD to reduce mercury will have an impact on SO2 emissions, but it seems clear that NDEQ should not assume any further reductions in SO2 emissions beyond 2015 level at Gerald Gentleman due to the EPA MATS rule. Similarly, it is not clear whether the technology being employed at other Nebraska power plants to meet the MATS rule will reduce SO2 or other pollutants.

In conclusion, we think the data presented in the report supports the conclusion that Nebraska is not making substantial progress in reducing SO2 emissions. We think the information presented in the report falls short of supporting the NDEQ's conclusion that our state is making substantial progress in reducing particulate pollution. The data does appear to support the conclusion that Nebraska is making progress in reducing NOx pollution, but it is not clear whether the current plan will result in a continuation of that trend.

We urge the Nebraska Department of Environmental Quality to take stronger action to reduce these pollutants, better protect the health of Nebraskans, and promote continued progress towards reducing pollution that impairs some of our Nation's iconic national parks. The NDEQ should rewrite and revise its State Implementation Plan to provide for real and continued progress in reducing air pollution.

Yours in Conservation,

Duane Hovorka, Nebraska Wildlife Federation

John Hansen, Nebraska Farmers Union

Responses to NWF-NFU comments

1. *General comments*

a. *NWF-NFU objects to NDEQ's conclusion that the current SIP is adequate and that no revision is needed at this time.*

Response 1a

This comment is addressed in Response 8 to Comments from NPCA/Sierra Club.

b. *NWF-NFU comments that data shows no significant progress in reducing SO_2 pollution and particulate emissions, stating that average SO_2 emissions for 2011-2014 are above that of the 2010 baseline.*

Response 1b

The progress report is designed to assess progress over a five-year period of time. The five-year period for this report is 2010-2014. Per EPA's *General Principles for the 5-Year Regional Haze Progress Reports for the Initial Regional Haze State Implementation Plans, April 2013,*

> *"For an analysis that "tracks the change over the past 5 years", the report will need to compare emissions at two points in time...this provision clearly calls for "tracking" of a "change" over a 5-year period, which necessitates at least 2 inventory years, 5 years apart."* (Guidelines, p. 11)

While the change in emissions may include year-to-year variations, overall progress is the focus of this section of the report. Tables 2 and 4 illustrate the overall decrease in emissions of SO_2 for sources within the state, including the seven top EGUs (by emissions). The inclusion of 2016 emissions data further demonstrates significant progress in reducing SO_2 emissions in the state.

With respect to particulate emissions, Tables 9 and 10 show overall increases which are primarily attributed to changes in the EPA method for calculating fire emissions. This is illustrated by examining emissions data for 2011-2014 for point, on-road, and non-road sources only (see Tables 9a and 10a below). An overall *decrease* in both PM10 and PM2.5 emissions are demonstrated when excluding emissions from fires. Significant progress toward 2018 particulate emissions projections is also demonstrated for these source sectors.

Table 9a: Source Emissions for PM_{10} (tons)							
Source	**2002**	**2010**	**2011**	**2012**	**2013**	**2014**	**2018**
Point	11,744	7536	8964	9040	8493	8165	18,654
On-Road	3467	2216	2891	2817	2744	2671	432
Non-Road	6541	5570	5421	4992	4563	4135	3269
Wild Fires	4	0					
Prescribed Fires	43	0					
TOTALS	21,799	15,322	17,276	16,849	15,800	14,971	22,355

Table 10a: Source Emissions for $PM_{2.5}$ (tons)							
Source	**2002**	**2010**	**2011**	**2012**	**2013**	**2014**	**2018**
Point	2393	2529	2320	2660	3246	2921	8596
On-Road	2975	1744	1789	1707	1626	1545	432
Non-Road	6373	5229	5116	4710	4305	3899	2974
Wild Fires	3	0					
Prescribed Fires	36	0					
TOTALS	11,780	9502	9225	9077	9177	8365	12,002

c. NWF-NFU comments that reducing emissions of SO_2, NO_x, and particulate emissions will also benefit the health of Nebraskans living near power plants.

NDEQ does not dispute the importance of the health of Nebraskans. We note, however, the RHR addresses visibility at Class I areas, with the goal being visibility improvement to natural conditions. Sources of visibility-impairing pollutants in Nebraska are also subject to the health-based standards for SO_2, NO_x, and PM.

The state is presently in attainment with NAAQS for these pollutants. State designations for SO_2, NO_x, and PM NAAQS were issued as follows:

2010 NO_2 NAAQS
February 17, 2012 (77 FR 9532)
No designated areas in Nebraska

2012 PM NAAQS
January 15, 2015 (80 FR 2205)
No designated areas in Nebraska

2010 1-hour SO_2 NAAQS
July 12, 2016 (81 FR 45039)
Areas surrounding GGS and NCS designated as "Unclassifiable/Attainment" (Data Requirements Rule)
Designations pending for Whelan Energy Center, Sheldon Station, and North Omaha Station

2. *Lack of progress in Reducing SO_2 Pollution*

a. *Table 8: Point source data does not reflect a steady decrease in SO_2 emissions (average emissions 2011-2014 show an increase over the 2010 baseline SO_2 emissions).*

Response 2a
As addressed in Response 1b above, this progress report is designed to assess progress over a five-year period of time. While the change in emissions may include year-to-year variations, overall progress is the focus of this section of the report. Tables 2 and 4 illustrate the overall decrease in emissions of SO_2 for sources within the state, including the top seven EGUs. The inclusion of 2016 data demonstrates further progress beyond the 5-year period examined for the report.

b. *Tables 12 and 13: some power plants show emissions increases in SO_2 and/or NO_x (average emissions 2011-2014 show an increase over the 2010 baseline SO_2 emissions).*

Response 2b
As noted in Responses 1b and 2a above, this report addresses the progress over the period 2010-2014. The overall progress for these top seven EGUs is illustrated in Tables 4, 5, 12, 16, and 17. With the inclusion of the 2016 data, further significant progress in emissions reductions is demonstrated. Progress toward 2018 projections for EGU emissions is notable when comparing 2016 CAMD emissions data (50,920 tons, Table 16) to the 2018 projections (75,617 tons, Table 12).

c. *Data show lack of progress in reducing SO_2 emissions from power plants, point sources, and all Nebraska sources in general.*

Response 2c
Tables 2, 4, 8, 12, and 16 contain SO_2 emissions data and, with the exception of emissions from fires, these data demonstrate an overall decrease within the state.

To illustrate overall SO_2 emissions reductions across all source categories in the state, Table 8 is shown below with emissions totals by year. The only categories showing overall increases were wildfires and prescribed fires, which is attributed to the new EPA method for estimating fire emissions, implemented in 2011 (additional discussion is provided in Section IV.A). The overall decrease in emissions for the period 2002-2014 is

shown as percent reduction. Overall emissions in 2014 also demonstrate progress by surpassing the 2018 overall emissions projections.

Table 8: Source Emissions for SO_2 (tons)

Source	2002	2010	2011	2012	2013	2014	% reduction 2002-2014	2018
Point	105,086	67,963	75,048	65,673	69,583	65,081		82,193
On-Road	2761	476	206	205	204	203		236
Non-Road	8879	1142	872	784	695	607		226
Wild Fires	0.3	0	110	110	110	110		268
Prescribed Fires	7	0	1054	1054	1054	1054		268
TOTALS	**116,733**	**69,581**	77,290	67,826	71,646	**67,055**	42.6%	83,191

The inclusion of 2016 CAMD data in Tables 4 and 16 further demonstrate the downward trend in EGU SO_2 emissions.

3. *Uncertainty in Particulate Emissions Trend*

a. *Increases in PM2.5 are not adequately addressed and it is unclear that particulate emissions have been reduced since 2010.*

Response 3a

This comment is addressed in Response 1b above.

4. *Uncertainty in Future Progress*

a. *It is unclear that MATS compliance will result in further SO_2 reductions at GGS, or in SO_2 and other pollutants at other Nebraska power plants.*

Response 4a

All of the top seven EGUs discussed in this report are subject to the MATS rule. The five EGUs that were granted extensions were in compliance before or on April 16, 2016 and have submitted compliance certification to NDEQ.

Tables 16 and 17 have been updated to include CAMD EGU emissions data from 2015 and 2016. Further SO_2 emissions reductions attributable to MATS compliance have been demonstrated since 2015 at Platte Generating Station (54% reduction), NCS (21% reduction), and GGS (9% reduction). Although Whelan did not demonstrate an emissions reduction, the increase was small (6%) and did not significantly impact the overall reduction in SO_2 emissions from these sources.

Appendix C

Public Hearing Documents

BEFORE THE NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

IN THE MATTER OF THE NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY'S DRAFT REGIONAL HAZE STATE IMPLEMENTATION PLAN FIRE-YEAR PROGRESS REPORT	))))))	REPORT OF PUBLIC HEARING SEPTEMBER 7, 2016

The undersigned hearing officer was appointed by the Director (Exhibit 1) to conduct the public hearing held on September 7, 2016, beginning at 2:30 p.m. Central Daylight Time (CDT) at the Nebraska Department of Environmental Quality, 1200 N St., Room 424, Lincoln, Nebraska, to accept public comment on the Department's Draft Regional Haze State Implementation Plan Five-Year Progress Report.

Pursuant to 40 CFR § 51.102, the Nebraska Department of Environmental Quality (NDEQ) provided public notice on August 5, 2015, of its intent to hold a public hearing for the NDEQ Regional Haze State Implementation Plan Five-Year Progress Report, invited the public to submit written comments, and scheduled a public hearing (Exhibit 2). The Nebraska Department of Environmental Quality Regional Haze State Implementation Plan Five-Year Progress Report (Exhibit 3) was available for public inspection on the Department web site and at the office of the NDEQ in Lincoln, Nebraska (Exhibit 2).

The hearing was opened at approximately 2:30 p.m. CDT on September 7, 2016. The undersigned hearing officer entered the following exhibits, which were submitted to the NDEQ prior to the hearing, into the record.

Exhibit 4 – Letter with attachments from Carol McCoy, Chief, Air Resources Division, United States Department of the Interior National Park Service

Exhibit 5 – Letter from Sunil Bector, Staff Attorney, Sierra Club; Stephanie Kodish, Clean Air Counsel, National Parks Conservation Association; and Nathan Miller, Engineering & Science Manager, National Parks Conservation Association

Exhibit 6 – Letter from William C. Allison V, Director, Air Pollution Control Division, Colorado Department of Public Health & Environment with attached letters from Paul Tourangeau, Director, Air Pollution Control Division, Colorado Department of Public Health & Environment

Carrie Wiese, Unit Supervisor of the Department's Air Quality Grants, Planning, and Outreach Unit, made introductory remarks, a copy of which was marked Exhibit 8 and entered into the hearing record.

Graham Jordison testified on behalf of the Sierra Club and submitted a petition signed by Sierra Club members from Colorado and Nebraska. The petition also included individual comments from signers. It was marked as Exhibit 7.

Duane Hovorka testified on behalf of the Nebraska Wildlife Federation and the Nebraska Farmers Union and submitted a letter on their behalf. The letter was marked as Exhibit 9.

The NDEQ Meeting Sign-In Sheet was marked as Exhibit 10.

All exhibits were received for the hearing record and are attached to this report and incorporated herein by this reference.

The hearing was closed at approximately 3:30 p.m. CDT. The undersigned hearing officer submits this report to the Director of the Department for consideration by him or his designated representative in this matter.

Dated: September 14, 2016

By: 

Susan M. Ugai
Hearing Officer

NEBRASKA DEPARTMENT OF ENVIRONMENTAL QUALITY

ORDER APPOINTING A
HEARING OFFICER

The Director has determined that it is necessary to appoint a hearing officer to conduct a public hearing on the Department's Regional Haze State Implementation Plan Five-Year Progress Report to be submitted to the United States Environmental Protection Agency pursuant to the Federal Clean Air Act.

IT IS ORDERED that Susan Ugai is appointed as the hearing officer to preside at the public hearing to be held on September 7, 2016 at the offices of the Nebraska Department of Environmental Quality, 1200 N St., Suite 400, Lincoln, Nebraska, commencing at 2:30 p.m. Central Time, and to exercise those powers and duties identified in Neb. Rev. Stat. § 81-1504(9), Title 115 – Rules of Practice and Procedure, and Title 129 – Nebraska Air Quality Regulations pertaining to such hearing.

Dated this 24th day of August, 2016.

Jim Macy
Director
Nebraska Department of Environmental Quality

Declaration of Gary Morrison

Lancaster County)
) ss
State of Nebraska)

I, Gary Morrison, declare under penalty of perjury that the following statement is true and correct:

1. The facts stated herein are based on my personal knowledge unless stated otherwise.

2. I am employed by the Nebraska Department of Environmental Quality as the Acting Information Technology Manager. In my capacity as Acting Information Technology Manager for the Department, I have personal knowledge of the facts set forth below. I am familiar with the Department of Environmental Quality and Information Technology Section's procedures for submitting and placing public notices of significant events on the Department's webpage, deq.ne.gov.

3. The Information Technology Section, under my supervision and direction, has an online public notice process. This process allows Department staff to submit public notices and related documents to appear within the Public Notice portion of the agency web pages. A record of this information, including the person initiating the public notice, the date submitted, date the public notice appeared on the website, and the date on which the public notice will be automatically removed from the website are indicated in Attachment 1 to this declaration, including a copy of the information that appears on the website.

4. Public notice of the following event was placed on the Department's website in accordance with the procedures described above:

A. Notice of a public comment period and public hearing on the Department's Draft Regional Haze State Implementation Plan Five-Year Progress Report to

be submitted to the United States Environmental Protection Agency pursuant to the Federal Clean Air Act. A copy of the screen page is attached to this declaration.

GARY MORRISON

Subscribed and sworn to before me this 24 day of August 2016, in Lincoln, Nebraska.

Notary Public

GENERAL NOTARY - State of Nebraska
CANDICE L. BATENHORST
My Comm. Exp. September 28, 2018

Opening Remarks – Public Hearing for Regional Haze Five-Year Progress Report
September 7, 2016

Good Afternoon,

My name is Carrie Wiese and I am the Section Supervisor over Grants, Planning, and Outreach in the Air Quality Division of the Nebraska Department of Environmental Quality. Today we are holding a public hearing for the Regional Haze Five-Year Progress Report. This report was posted for public notice on August 5th, 2016, and today's public hearing is being held as required by 40 CFR §51.102.

The federal Regional Haze Rule, as amended on July 6, 2005, directs state and federal agencies to work together to improve visibility in 156 national parks and wilderness areas, known as "Class I" areas. States are required to develop and implement air quality protection plans to reduce pollution that causes visibility impairment, through coordination with the U.S. Environmental Protection Agency, the National Park Service, U.S. Fish and Wildlife Service, U.S. Forest Service, and other interested parties.

While there are no Class I areas within the borders of Nebraska, the State was required to submit a Regional Haze State Implementation Plan to address impacts from sources in Nebraska on Class I areas in other states. The Nebraska Department of Environmental Quality submitted its regional haze state implementation plan to the Environmental Protection Agency in 2011. Portions of this plan were approved by the Environmental Protection Agency, and portions were disapproved for which a federal implementation plan was later issued. The state of Nebraska challenged this action, and a revised federal implementation plan remains pending.

As required by 40 CFR §51.308(g), states must also submit to the Environmental Protection Agency, five years after submittal of the state implementation plan, a report outlining progress towards reasonable progress goals outlined in state regional haze plans. Criteria to be included in the report include:

- a description of control measures and status of their implementation;
- a summary of emission reductions achieved through implementation of the control measures
- visibility conditions at Class I areas affected by the state;
- analysis of emissions changes over the applicable five-year period;
- assessment of changes in anthropogenic emissions that have limited progress in reducing emissions and improving visibility;
- assessment of whether the current implementation plan elements and strategies are sufficient to enable the State to meet all established reasonable progress goals;
- review of the State's visibility monitoring strategy and any modifications to the strategy as necessary; and
- determination of the adequacy of the existing implementation plan.

The progress report presented for public notice and the subject of today's hearing was prepared to meet the requirements of 40 CFR §51.308(g). At this time we will accept written and oral comments. All comments received will be evaluated for possible revision to the progress report prior to submission to the Environmental Protection Agency.

Thank you.